ARL

US Army Research Laboratory

Software Assessment of the Global Force Management (GFM) Search Capability Study

by Timothy Hanratty, Mark Mittrick, Alex Vertlieb, and Frederick Brundick

NOTICES

Disclaimers

The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

Citation of manufacturer's or trade names does not constitute an official endorsement or approval of the use thereof.

Destroy this report when it is no longer needed. Do not return it to the originator.

US Army Research Laboratory

Software Assessment of the Global Force Management (GFM) Search Capability Study

by Timothy Hanratty, Mark Mittrick, Alex Vertlieb, and Frederick Brundick
Computational and Information Sciences Directorate, ARL

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE		3. DATES COVERED (From - To)	
February 2017	Technical Note		October 2014–September 2015	
4. TITLE AND SUBTITLE Software Assessment of the Global Force Management (GFM) Search Capability Study			**5a. CONTRACT NUMBER**	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Timothy Hanratty, Mark Mittrick, Alex Vertlieb, and Frederick Brundick			**5d. PROJECT NUMBER**	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army Research Laboratory ATTN: RDRL-CII-T Aberdeen Proving Ground, MD 21005-5067			**8. PERFORMING ORGANIZATION REPORT NUMBER** ARL-TN-0811	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			**10. SPONSOR/MONITOR'S ACRONYM(S)**	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Global Force Management Data Initiative (GFM DI) project has led to the development of a method for codifying force structure within all of the military services and joint organizations. The implementation of universal GFM DI methods provides an unprecedented opportunity for a greater understanding of our forces and their composition. As a part of the intelligence process, answering Friendly Force Information Requirements enable commanders to choose the best units to fulfill mission tasks. The objective of this project is to build and implement a method for capability-based searches within the GFM DI construct that locates the best force structures for performing specified mission tasks. Using statistical similarity algorithms, the initial search application will incorporate mission task requirements to generate 2 listings. The first will consist of optimal single-unit solutions for specified tasks. The second will include optimal combinations of lower echelon units that when acting as part of a combined taskforce can accomplish these tasks.

15. SUBJECT TERMS

GFM, search capability, MOS, Friendly Force Information Requirements, database

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Timothy Hanratty
a. REPORT	b. ABSTRACT	c. THIS PAGE	UU	90	19b. TELEPHONE NUMBER (Include area code)
Unclassified	Unclassified	Unclassified			410-278-2084

Contents

List of Figures

List of Tables

INTENTIONALLY LEFT BLANK.

1.   Introduction

The Global Force Management Data Initiative (GFM DI) project has led to the development of a method for codifying force structure within all of the military services and joint organizations. In adherence with Department of Defense directives, all military organizations will comply with this new standard method of computerized identification and organizational representation. The GFM DI implementation provides an opportunity for building useful computer applications meant to streamline the preparation for and execution of military operational planning and missions. Specifically, GFM DI data can facilitate the creation of optimal military mission task organizations. Basic doctrine captures a description of military unit structures fitted to tasks. However, the realities of combat situations often cause modification to these tenets. Software tools capable of using military situational understanding in terms of matching tasks and capabilities to unit structure represented within GFM DI data do not currently exist.

2.   Research Objectives

The implementation of universal GFM DI methods provides an unprecedented opportunity for a greater understanding of our forces and their composition. As a part of the intelligence process, answering Friendly Force Information Requirements (FFIRs) enable commanders to choose the best units to fulfill mission tasks. The objective of this project is to build and implement a method for capability-based searches within the GFM DI construct that locates the best force structures for performing specified mission tasks. Using statistical similarity algorithms, the initial search application will incorporate mission task requirements to generate 2 listings. The first will consist of optimal single unit solutions for specified tasks. The second will include optimal combinations of lower echelon units that when acting as part of a combined taskforce can accomplish these tasks. Creation of a capability-based search in the optional second year will build on the task-based search to include consideration of mission, enemy, terrain and weather, troops – time available, and civilian considerations (METT-TC) context and complex mission-types. A longer-term goal is the adaptation of this search for use with real multi-service force structures, known as GFM on-hand data, via links to the GFM DI instantiated (Object Item) data.

3.   Status to Achieving Near-Term Research Objectives

The creation of a true capability-based search focused on the development of a task-based unit search capacity within GFM type (Object Type) and instantiated data. The capability search routine used GFM DI data to determine the platforms, equipment, and personnel present within a typical unit to shape the capability search. The search application performs a similarity search over all available units looking for the capabilities to accomplish the task and returns a listing of found units to the requester. As a proof of concept, the near-term objective for this project was to restrict the capability search to equipment type data and military operational series (MOS) data.

3.1 Equipment Capability Vector Work

The following is a summarization of the work that was done to develop the GFM task-based search capability for the equipment centric search:

- Equipment was initially pruned to Army data (~1700 equipment types/sub types), then further refined to battalion level with a focus on a ground scenario (~200 types), and finally combined with similar equipment together into the current capability vector (19 types)(Fig. 1). This equipment vector is customizable and can be tailored to different scenarios. A representative example of this data set is found in Appendix A. Items in red were deemed not necessary for the initial phase.

- Creation of Capability Vector: Map multiple enumerations into single categories. This step involved taking multiple enumerations and combining them under one single category. For example, a rifle and a pistol are both of the category Personal Weapon. Please see Fig. 2 and Appendix B for the complete list.

- Determined the representative platoon types that represented the Army and used them in creating the database vectors. See Appendix C for the complete list.
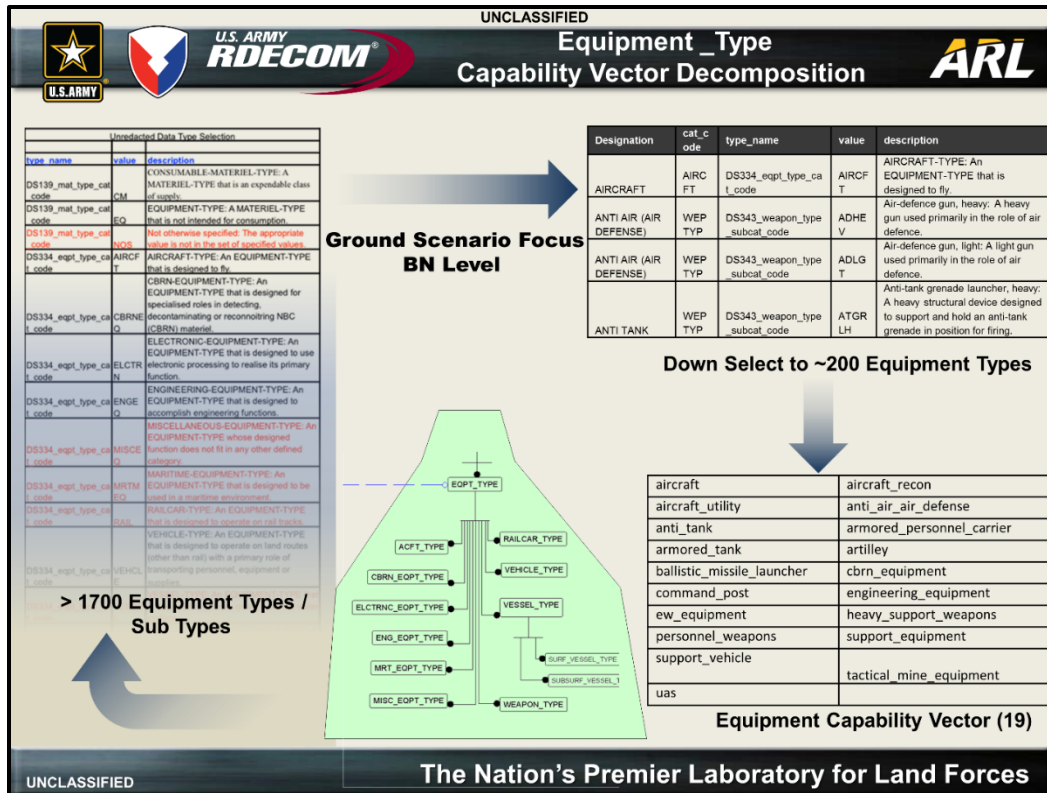
Fig. 1   Equipment capability vector decomposition

aircraft	aircraft_recon
aircraft_utility	anti_air_air_defense
anti_tank	armored_personnel_carrier
armored_tank	artilley
ballistic_missile_launcher	cbrn_equipment
command_post	engineering_equipment
ew_equipment	heavy_support_weapons
personnel_weapons	support_equipment
support_vehicle	tactical_mine_equipment
uas	. . .

Fig. 2   Equipment capability vector

3.2 MOS Capability Vector Work

The following is a summarization of the work that has been accomplished to develop a GFM task-based search capability for the MOS-centric search:

- Army MOS codes identified (Appendix D).

- Created the Capability Vector: Mapped multiple enumerations into single categories. This step involved taking multiple enumerations and combining them under one single category. For example, an 11A and an 11B are both of the category Infantry. Please see Appendix D for the complete list.

3.3 Schema and Database Work Breakdown

3.3.1 Overall Generation

The generation of the SQL schema used for the application is dynamic. It uses the types of equipment capabilities defined in the Simplified Capability comma separated value (CSV) resource to create fields for each type. SQL script files are created for each table in the Temp directory so they can be reviewed and rerun if needed. After the SQL script files are generated, any old schema is cleaned out and the new one is deployed to the server. With the schema in place, populating it is the next step.

The equipment type simple alias table is populated by iterating through the Simplified Capability CSV resource and inserting the relevant information into the table. While iterating through the Simplified Capability CSV resource, the equipment type lookup table is also populated. The equipment type lookup table is populated by the equipment that match the simplified capabilities specified in the CSV. If a piece of equipment matches multiple simple types, only the most specific match is taken.

The troop entity/billet type lookup table is the next thing to be populated, using only a SQL query that extracts all of the necessary fields from the GFM database. The equipment type lookup and the troop entity/billet type lookup tables are then indexed temporarily since they will be used frequently during the population of the rest of the tables.

The next thing generated is the troop entity/billet instance tree. This is done using the nestedSets in the GFM database. A similar process is done to generate the type tree. Using the instance tree, the parent-child aggregate cross reference table is populated by recursing through the tree and inserting every possible parent-child relationship (direct and indirect).

Population of the actual equipment count table is the next step. It uses the instance tree, recursively aggregating the equipment capability counts for child instances and inserting the aggregate values into the database in batch. A similar process will be done with the theoretical equipment count table, using the type tree instead, which is a little different in format. Currently, there is no type tree data, so

equipment vectors for types of interest have been derived from similar instances and used as the input for the theoretical equipment count table.

Populating the actual and theoretical MOS count tables are done next. The instance tree is again used, recursively aggregating the MOS code counts for child instances and inserting the aggregate values into the database in batch. A similar process will also be done with the theoretical MOS count table, using the type tree instead. Currently, however, there is no type tree data, so MOS vectors for types of interest have been derived from similar instances and used as the input for the theoretical MOS count table.

Finally, all of the tables that were populated are indexed and given primary/foreign keys if necessary. Doing this after the population saves time because all of the records can be processed at once, instead of indexing or checking constraints after every insert.

Once generating and populating the application database is complete, the querying application program interface (API) calls are ready for use.

3.3.2 Algorithm Descriptions

GetTopNSatisfyingInstanceEwids: To get the instance EwIDs that satisfy the needs of the input type EwIDs (each with a count of how many are desired), multiple steps are taken. The capabilities of the input type EwIDs are queried for, and the capabilities are aggregated to form one capability vector that represents the entire capability needs of the request. The instance capability vectors are queried for vectors that have equal to or greater counts than requested in each area. Those results are sorted by the total capability count of each vector (ascending) and the top N are returned as valid results. The algorithm also makes sure to filter out results of size other than echelons given (like battalion for example) and makes sure the results have a known name (not '%NKN').

3.3.3 Java API Description

Generation API call:

GenerateAll.run(): This is the process that runs through the entire database generation using the GFM database. It generates SQL scripts that are used to create, drop, and index tables. Next it cleans up any tables hanging around from an old generation and runs the create table scripts that were generated. It then populates the tables generated by creating lookup tables of things used by the population process, creating in memory trees from the nested sets, and aggregating over the trees. Lastly, it indexes the tables generated to make the other API calls fast.

Querying API calls:

EwidDetailHelper.getEwidsName(EwID): Returns the name in the GFM database that corresponds to the input instance EwID.

EwidDetailHelper.getEwidsNames(List<EwID>): Returns the names in the GFM database that correspond to the input instance EwIDs in the order the EwIDs were given.

ReadinessIndicator.getTopNSatisfyingInstanceEwids(Map<EwID, Count>, AlgorithmType, Set<EchelonType>, N): Returns a List of Sets of the 'Optimal' EwIDs that each satisfy the capabilities requested from the input type EwIDs. 'Optimal' is defined as having as little overhead capabilities as possible. The result list is ordered by optimality. The results are filtered to only contain the echelon types given. The algorithm type is used to determine which capabilities will be considered (equipment/MOS/both).

EwidDetailHelper.getInstanceCapabilitiesMap(EwID, AlgorithmType): Returns an ordered Map of Equipment/MOS Names to their count (ex. "Rifle" -> 1, or "11B" -> 4) for the given instance EwID. The algorithm type is used to determine which capabilities to retrieve (equipment/MOS/both).

EwidDetailHelper.getTypeCapabilitiesMap(Map<EwID, Count>, AlgorithmType): Returns the aggregate ordered Map of Equipment/MOS Names to their count (ex. "Rifle" -> 1, or "11B" -> 4) for the given type EwIDs. The algorithm type is used to determine which capabilities to retrieve (equipment/MOS/both).

EwidDetailHelper.getInstanceSubTree(EwID): Returns the N-ary Tree of EwIDs along with their Lft / Rgt values from the nested set that are beneath the instance EwID given.

3.3.4 REST API Description

For the prototype UI, 2 REST API calls were developed. One oriented at getting the initial dynamic content for display and another to streamline the "find satisfying EwIDs" process.

GFMRest.getRequirmentsLists(): A GET that produces JSON representing the list of available requirements type EwIDs and their respective canonical names and echelons in the following format:

```
{
        "requirementsTypes": {
                "co": {
                        "Company EwID 1": "Company Type Name 1",
                        "Company EwID 2": "Company Type Name 2",
                        "Company EwID 3": "Company Type Name 3"
                },
                "plt": {
                        "Platoon EwID 1": "Platoon Type Name 1",
                        "Platoon EwID 2": "Platoon Type Name 2",
                        "Platoon EwID 3": "Platoon Type Name 3",
                        "Platoon EwID 4":  Platoon Type Name 4"
                }
        },
        "error": "If there was an error, this would be populated."
}
```

GFMRest.submitRequirements(SubmitRequest): A POST that takes JSON and produces JSON. The given JSON is representing a request for requirements that need to be satisfied and is of the following form:

```
{
        "requirementsType":
"AlgorithmTypeEnumValue","echelonTypes":
["AcceptableReturnEchelonType1","AcceptableReturnEchelonType2"],
        "ewidCounts": {
                "EwidOfType1Requested": NumberRequestedOfType1,
                "EwidOfType2Requested": NumberRequestedOfType2
        },
        "numberOfResults": NumberOfRequestedResults
}
```

The returned JSON is representative of answers found that satisfy the requirements, along with the total requirements counts asked for and any error/success message. Even if there is no answer for the request given, the requirements vector will still be returned. More than one instance EwID may be used to produce a combined satisfying response. This is the form of the response:

```
{
"results": {
"answers": [{
        "answerVector": {
                "equipment": {
                        "equipmentType1": countOfEquipmentType1,
                        "equipmentType2": countOfEquipmentType2,
                        "equipmentType3": countOfEquipmentType3
                },
                "mosCodes": {
                        "MOSCode1WithTitle": countOfMOSCode1,
                        "MOSCode2WithTitle": countOfMOSCode2,
                        "MOSCode3WithTitle": countOfMOSCode3
```

```
                },
                "mosFields": {
                        "MOSField1WithTitle":
aggregateCountOfMOSCodesInField1,
                        "MOSField2WithTitle":
aggregateCountOfMOSCodesInField2
                }
        },
        "answerNames": {
                "satisfyingInstanceEwID": "satisfyingInstanceName"
        }
},
{
        "answerVector": {
                "equipment": {
                        "equipmentType1": countOfEquipmentType1,
                        "equipmentType2": countOfEquipmentType2,
                        "equipmentType3": countOfEquipmentType3
                },
                "mosCodes": {
                        "MOSCode1WithTitle": countOfMOSCode1,
                        "MOSCode2WithTitle": countOfMOSCode2,
                        "MOSCode3WithTitle": countOfMOSCode3
                },
                "mosFields": {
                        "MOSField1WithTitle":
aggregateCountOfMOSCodesInField1,
                        "MOSField2WithTitle":
aggregateCountOfMOSCodesInField2
                }
        },
        "answerNames": {
                "partiallySatisfyingInstanceEwID1":
"partiallySatisfyingInstanceName1",
                "partiallySatisfyingInstanceEwID2":
"partiallySatisfyingInstanceName2"
        }
}],
"requirementsVector": {
        "equipment": {
                "equipmentType1": requestedCountOfEquipmentType1,
                "equipmentType2": requestedCountOfEquipmentType2,
                "equipmentType3": requestedCountOfEquipmentType3
        },
        "mosCodes": {
                "MOSCode1WithTitle": requestedCountOfMOSCode1,
                "MOSCode2WithTitle": requestedCountOfMOSCode2,
                "MOSCode3WithTitle": requestedCountOfMOSCode3
        },
        "mosFields": {
                "MOSField1WithTitle":
aggregateRequestedCountOfMOSCodesInField1,
                "MOSField2WithTitle":
aggregateRequestedCountOfMOSCodesInField2
        }
}
},
```

```
"error": "Error message, if any.",
"success": "Success message, if any."
}
```

3.3.5 Detailed Schema Description

In all tables, the mod_date represents the last time that record was modified.

3.3.6 Troop Entity Type Lookup Table

This list is for looking up the type of the instance and/or getting the names/ size codes associated with them.

gfm_troop_entity_instance_id	bigint(20) PK
gfm_troop_entity_instance_name_txt	varchar(100)
gfm_troop_entity_type_id	bigint(20) (Indexed)
gfm_troop_entity_type_name_txt	varchar(100)
gfm_troop_entity_type_size_code	varchar(6)
mod_date	timestamp

Example:

gfm_troop_entity_instance_id	72060793804236357
gfm_troop_entity_instance_name_txt	#1 SNIPER TEAM
gfm_troop_entity_type_id	72060793803979330
gfm_troop_entity_type_name_txt	SNIPER TEAM
gfm_troop_entity_type_size_code	TEAM
mod_date	2014-12-30 13:57:24

This record represents a troop instance entity with ID 72060793804236357 called #1 SNIPER TEAM that has a corresponding type with ID 72060793803979330 called SNIPER TEAM with size code TEAM.

3.3.7 Equipment Type Lookup Table

This list is for looking up the simple capability type of equipment.

gfm_equipment_type_id	bigint(20) PK
equipment_simple_type	enum('aircraft','armored_personnel_carrier','aircraft_recon','aircraft_utility','anti_air_air_defense','ballistic_missile_launcher','anti_tank','armored_tank','engineering_equipment','command_post','artillery','tactical_mine_equipment','cbrn_equipment','support_vehicle','uas','personnel_weapons','heavy_support_weapons','support_equipment','ew_equipment')
mod_date	timestamp

Example:

gfm_equipment_type_id	72060793929189043
equipment_simple_type	aircraft
mod_date	2015-04-26 18:59:49

This record represents a piece of equipment with ID 72060793804236357 that has a simple capability type called aircraft.

3.3.8 Theoretical Equipment Count Table

This list is for referencing the aggregate equipment capability counts of the different billet/troop types.

gfm_troop_entity_type_id	bigint(20) PK
aircraft	int(1)
armored_personnel_carrier	int(1)
aircraft_recon	int(1)
aircraft_utility	int(1)
anti_air_air_defense	int(1)
ballistic_missile_launcher	int(1)
anti_tank	int(1)
armored_tank	int(1)
engineering_equipment	int(1)
command_post	int(1)
artillery	int(1)
tactical_mine_equipment	int(1)
cbrn_equipment	int(1)
support_vehicle	int(1)
uas	int(1)
personnel_weapons	int(1)
heavy_support_weapons	int(1)
support_equipment	int(1)
ew_equipment	int(1)
mod_date	timestamp

Example:

gfm_troop_entity_type_id	72060793885816536
aircraft	15
armored_personnel_carrier	0
aircraft_recon	0
aircraft_utility	0
anti_air_air_defense	0

ballistic_missile_launcher	0
anti_tank	0
armored_tank	0
engineering_equipment	0
command_post	0
artillery	0
tactical_mine_equipment	0
cbrn_equipment	20
support_vehicle	2
uas	0
personnel_weapons	42
heavy_support_weapons	0
support_equipment	0
mod_date	2015-04-26 19:03:14

This record represents a billet/troop type entity with ID 72060793885816536 that has various amounts of different capabilities.

3.3.9 Actual Equipment Count Table

This list is for referencing the aggregate equipment capability counts of the different billet/troop types.

gfm_troop_entity_instance_id	bigint(20) PK
gfm_name_txt	varchar(100)
gfm_size_code	varchar(6)
aircraft	int(1)
armored_personnel_carrier	int(1)
aircraft_recon	int(1)
aircraft_utility	int(1)
anti_air_air_defense	int(1)
ballistic_missile_launcher	int(1)
anti_tank	int(1)
armored_tank	int(1)
engineering_equipment	int(1)
command_post	int(1)
artillery	int(1)
tactical_mine_equipment	int(1)
cbrn_equipment	int(1)
support_vehicle	int(1)
uas	int(1)
personnel_weapons	int(1)
heavy_support_weapons	int(1)

support_equipment	int(1)
ew_equipment	int(1)
mod_date	timestamp

Example:

gfm_troop_entity_instance_id	720060793789251845
gfm_name_txt	0015 IN RGT 01 BN COMB ARMS
gfm_size_code	NOS
aircraft	0
armored_personnel_carrier	63
aircraft_recon	0
aircraft_utility	0
anti_air_air_defense	12
ballistic_missile_launcher	0
anti_tank	0
armored_tank	72
engineering_equipment	0
command_post	0
artillery	29
tactical_mine_equipment	0
cbrn_equipment	755
support_vehicle	59
uas	0
personnel_weapons	1254
heavy_support_weapons	0
support_equipment	8
ew_equipment	2513
mod_date	2015-04-26 19:01:36

This record represents a billet/troop instance entity with ID 720060793789251845, name 0015 IN RGT 01 BN COMB ARMS, and size code NOS that has various amounts of different capabilities.

3.3.10 Equipment Type Simple Alias Table

This list is for looking up the column name used in the GFM database MatType table for equipment that has been given an associated simple capability type. To be classified as the simple capability type, the piece of equipment must have the same high-level type (ex. AIRCRFT) and the same detailed type under the indicated GFM type column (ie. SCOUT in acft_type_main_purpose_code).

gfm_equipment_type_name	varchar(50)
gfm_equipment_detailed_cat_code	varchar(10) PK
gfm_equipment_simple_cat_code	varchar(10) PK
gfm_type_column_name	varchar(50)
equipment_simple_type	enum('aircraft','armored_personnel_carrier','aircraft_recon','aircraft_utility','anti_air_air_defense','ballistic_missile_launcher','anti_tank','armored_tank','engineering_equipment','command_post','artillery','tactical_mine_equipment','cbrn_equipment','support_vehicle','uas','personnel_weapons','heavy_support_weapons','support_equipment','ew_equipment')
mod_date	timestamp

Example:

gfm_equipment_type_name	DS4368_acft_type_main_purp_cd
gfm_equipment_detailed_cat_code	SCOUT
gfm_equipment_simple_cat_code	AIRCFT
gfm_type_column_name	acft_type_main_purpose_code
equipment_simple_type	aircraft_recon
mod_date	2015-04-26 18:59:48

This record represents a record in the Type Matrix CSV that has been combined with the typeNameToMatTypeColumnMapping mapping file. This record indicates that the record in the Type Matrix with type_name DS4368_acft_type_main_purp_cd, value SCOUT, and cat_code AIRCRFT has the simple type aircraft_recon and that the detailed cat code (SCOUT) should be looked for in the acft_type_main_purpose_code field of the MatType table.

3.3.11 Parent-Child Billet Aggregate XRef Table

This table is for checking to see if a billet / troop instance entity is the parent or child of (through one or more hops in the hierarchy) another billet/troop instance. It would be bad to suggest that 2 entities (one with 6 Rifles, one with 4 Rifles) would fulfill some set of capabilities (ex 10 Rifles) requirements and have them have a parent-child relation. The answer would be incorrect because the 6 Rifles of the parent entity would already include the 4 Rifles of the child entity, so the combined Rifle count would only be 6.

gfm_parent_instance_id   bigint(20) (Indexed)
gfm_child_instance_id   bigint(20) (Indexed)
mod_date   timestamp

Example:

gfm_parent_instance_id	72060793789254990
gfm_child_instance_id	72060793791340786
mod_date	2014-12-30 13:57:40

This record represents that some billet/troop instance entity with ID 72060793789254990 is the parent of some billet/troop instance entity with ID 72060793791340786. The inverse is true in regards to the 'is the child of' relation.

3.3.12 Theoretical MOS Count Table

This list is for referencing the aggregate MOS capability counts of the different billet/troop types.

gfm_troop_entity_type_id   bigint(20) PK
00B   int(1)
00D   int(1)
00F   int(1)
00G   int(1)
00J   int(1)
00K   int(1)
00L   int(1)
00P   int(1)
00R   int(1)
00T   int(1)
00X   int(1)
00Z   int(1)
011A   int(1)
01A   int(1)
01B   int(1)
01C   int(1)
…   …
mod_date   timestamp

3.3.13 Actual MOS Count Table

This list is for referencing the aggregate MOS capability counts of the different billet/troop types.

gfm_troop_entity_instance_id	bigint(20) PK
gfm_name_txt	varchar(100)
gfm_size_code	varchar(6)
00B	int(1)
00D	int(1)
00F	int(1)
00G	int(1)
00J	int(1)
00K	int(1)
00L	int(1)
00P	int(1)
00R	int(1)
00T	int(1)
00X	int(1)
00Z	int(1)
011A	int(1)
01A	int(1)
01B	int(1)
01C	int(1)
…	…
mod_date	timestamp

3.3.14   Schema Population Time Improvements

At first, the process was to sequentially populate all of the tables necessary to answer queries, one row at a time and then everything at once. This proved to be very slow. Two things were done that yielded large time improvements:

First, the tables created during schema population that are used in the process of populating the rest of the tables were indexed before they were used by other tables. This yielded a 9× speed improvement.

Second, the insertion of rows one at a time for large tables was changed to batch up generated rows before inserting them into the database. This change yielded an additional 2× speed improvement.

3.3.15 Configurations Options

There are configuration options in the configuration file for the following properties:

Database Connection Information:

```
databaseURL - the URL to use to connect to the Database with
databaseUsername - the Username to Login to the Database
```

databasePassword - the Password to Login to the Database
appDatabaseName - the Database Name of this Application
gfmDatabaseName - the Database Name of the GFM Database
instanceNestedSetName - the Name of the Nested Set that the instance tree is represented by
typeNestedSetName - the Name of the Nested Set that the type tree is represented by

Files stored in the resources directory and loaded as resources:

simplifiedCapabilityCSV - the Name of the CSV File that contains the simplified equipment capabilities to GFM cat code associations
typeNameToMatTypeColumnMapping - the Name of the Property File containing a mapping of cat codes types in the simplifiedCapabilityCSV to the column name in the MatType Table that would contain the codes
catCodePriorityFile - the Name of the File containing an ordered, new-line-separated list of cat codes field types that correspond to the column names in the MatType Table. The list should be ordered in descending priority of which cat code field to use for the simple type mapping
ewidToEquipmentCountsCSV - name of the CSV file containing type of interest EwID to corresponding equipment vector mapping. This will only be needed until a type tree exists
ewidToMOSCountsCSV - name of the CSV file containing type of interest EwID to corresponding MOS vector mapping. This will only be needed until a type tree exists
typeEwidToCanonicalNameAndTypeCSV - name of the CSV file containing the type EwIDs available for use in the UI, their canonical names, and an echelon code for the UI
mosCodeList - name of the file containing the new line separated ordered MOS Codes that are to be used in the system
wikiMOSCodeTitleTSV - name of the TSV file containing the Titles of the MOS Codes gathered from Wikipedia. Used for display purposes
armyMOSCodeTitleTSV - name of the TSV file containing the Titles of the MOS Codes gathered from army.mil. Used for display purposes
mosFieldTitleTSV - name of the TSV file containing Titles for Army MOS Fields

Files and Directories stored in the Temp Directory of the Application:

schemaDirectory - the Directory created in the Application's Temp Directory to be used to store the generated SQL files
dropTablesSQLScriptFile - the Name of the Drop Tables SQL Script File that will be stored with the other SQL files in the Temp Directory
addKeysAndIndexesSQLScriptFile - the Name of the Add Keys and Indexes SQL Script File that will be stored with the other SQL files in the Temp Directory
rdbFormattedSimplifiedConceptListFile - the Name of the File used to store the Simplified Formatted GFM Equipment Concepts / Capabilities in the Application's Temp Directory

Extra Batch Size Configuration (Optional) - These are batch sizes used for determining when to stop building an insert statement and execute what we have so far. We suggest not changing these (since they have default values internally) unless you see an SQL error saying something like "query too long", in which case enabling and reducing them slightly would be advised:
batchElementCountLimit (Default 2500) - indicates the number of elements in the equipment vector list that it should flush at when populating the equipment tables
batchCharacterLengthLimit (Default 500000) - indicates the number of characters in the SQL insert string that it should flush at when populating lookup and XRef tables

Here is an example configuration file with #Comments:

```
#Database Connection Information:
#Database URL used to connect with
databaseURL=jdbc:mysql://localhost/Simple_GFM?allowMultiQueries=true
#Database Login Username
databaseUsername=root
#Database Login Password
databasePassword=mysql
#Application Database Name
appDatabaseName=Simple_GFM
#GFM Database Name
gfmDatabaseName=ArmySmallType_chart35

#Name of the nested set that is used for the instance tree
instanceNestedSetName=instanceTree
#Name of the nested set that is used for the type tree
typeNestedSetName=instanceTree

#Files stored in the resources directory and loaded as resources:
#Name of the CSV File that contains the simplified equipment
concepts to GFM cat code mapping
simplifiedCapabilityCSV=TypeMatrix.csv
#Property File Name containing a mapping of cat codes types in
the simplifiedCapabilityCSV to the field name in the MatType
Table that would contain them
typeNameToMatTypeColumnMapping=typeNameToMatTypeTableColumnNameMapping.properties
#File containing an ordered, new-line-separated list of cat codes
field types that correspond to the column names in the MatType
Table.
#The list should be ordered in descending priority of which cat
code field to use for the simple type mapping.
catCodePriorityFile=equipmentCatCodeTypePriority
#File containing Temporary Equipment Count Vectors for the
Platoon EwIDs used in the UI application... should be deleted
eventually
ewidToEquipmentCountsCSV=ewidToEquipmentCounts.csv
#File containing Temporary MOS Count Vectors for the Platoon
EwIDs used in the UI application... should be deleted eventually
ewidToMOSCountsCSV=ewidToMOSCounts.csv
#File containing Type Ewid to Canonical Name and Echelon Type
```

```
Mapping for use in the UI
typeEwidToCanonicalNameAndTypeCSV=typeEwidToCanonicalNameAndType.
csv
#File containing the ordered list of MOS Codes
mosCodeList=mosCodeList
#File containing the MOS Code and Title TSV from Wikipedia
wikiMOSCodeTitleTSV=wikiMOSCodeTitle.tsv
#File containing the MOS Code and Title TSV from army.mil
armyMOSCodeTitleTSV=armyMOSCodeTitle.tsv
#File containing the MOS Field and Title TSV from various sources
mosFieldTitleTSV=mosFieldTitle.tsv


#Files and Directories stored in the Temp Directory of the
Application
#Directory created in the Application's Temp Directory to be used
to store generated SQL files
schemaDirectory=sql
#Name of the Drop Tables SQL Script File that will be stored with
the other SQL files in the Temp Directory
dropTablesSQLScriptFile=dropTables.sql
#Name of the Add Keys and Indexes SQL Script File that will be
stored with the other SQL files in the Temp Directory
addKeysAndIndexesSQLScriptFile=addKeysAndIndexes.sql
#Name of the File used to store the Simplified Formatted GFM
Equipment Concepts / Capabilities in the Application's Temp
Directory
rdbFormattedSimplifiedConceptListFile=formattedConcepts.txt
#NOTE: These are batch sizes used for determining when to stop
building an insert statement and execute what we have so far
# We suggest not changing these unless you see an sql error
saying something like "query too long", in which case enabling
# and reducing them slightly would be advised
#This indicates the number of elements in the equipment/mos
vector list that it should flush at when populating the
equipment/mos tables
#batchElementCountLimit=2500
#This indicates the number of characters in the insert string
that it should flush at when populating lookup and XRef tables
#batchCharacterLengthLimit=500000
```

3.3.16 Resources Required

There are 12 file resources used in the application. The rest of the files are generated during the Generator.run() API call.

config.properties: This is a properties file that holds the configurations to the application. This is the way that the application can be configured without touching the source code or rebuilding.

TypeMatrix.csv: This is a csv file containing lines that indicate Simple Equipment Capability Type, High Level Cat Code, Detailed Cat Code Type, and Detailed Cat Code Value.

Example:
AIRCRAFT_RECON,AIRCFT,DS4368_acft_type_main_purp_cd,SCOUT

typeNameToMatTypeTableColumnNameMapping.properties: This is a properties file that acts as a mapping between the Detailed Cat Code Type in the TypeMatrix.csv file and the column names in the MatType table in the GFM database.

Example:
DS4368_acft_type_main_purp_cd=acft_type_main_purpose_code

equipmentCatCodePriorityFile: This is a file that contains an ordered, new-line-separated list of cat codes field types that correspond to all of the cat code column names in the MatType Table. The list should be ordered in descending priority of which cat code field to use for the simple type mapping.

Example:
acft_type_main_purpose_code
acft_type_training_cat_code
wpn_type_subcat_code
eqpt_subtype_cat_code
eqpt_type_cat_code

ewidToEquipmentCounts.csv: Contains the types of interest EwIDs and their corresponding equipment vectors.

Example:
72060793789233505,"0,0,0,0,0,0,0,0,0,0,0,0,46,0,0,126,0,0,76"

ewidToMOSCounts.csv: Contains the types of interest EwIDs and their corresponding MOS vectors.

Example:
72060793885816536,"0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,…,0"

typeEwidToCanonicalNameAndType.csv: Contains the type EwIDs available for use in the UI, their canonical names and an echelon code for the UI.

Example: 72060793789233505,MP Platoon,plt

mosCodeList; Contains a new line separated of ordered MOS Codes.

Example:
00B
00D

wikiMOSCodeTitle.tsv: Contains a MOS Code to Title mapping gathered from Wikipedia in the format of MOSCode{{tab}}Title.

> Example: 11A Infantry Officer

armyMOSCodeTitle.tsv: Contains a MOS Code to Title mapping gathered from army.mil in the format of
Title{{tab}}MOSCode{{tab}}Category{{tab}}RoleDescription.

> Example: Infantryman   11B   Infantry   Supervises, leads, or serves as a member of an infantry activity that employs individual or crew-served weapons in support of offensive and defensive combat operations.

mosFieldTitle.tsv: Contains Army MOS Field to Title mapping in the format: of

MOSField{{tab}}Title.

> Example: 11   Infantry

log4j.xml: This is a log4j properties file that tells the application the how to log. You can select different logging levels, different places to output of logs, etc. For more information refer to

http://logging.apache.org/log4j/2.x/manual/configuration.html.

3.3.17   How to edit the Configuration File:

1) Open the war/jar file with a program like WinRAR or 7zip so that you can see the files inside.

2) Open the "config.properties" file.

3) Edit it as needed.

3.3.18   Graphical User Interface (GUI) Work

- Given the representative platoon types, an interactive graphical user interface to allow simplified task organization and capability vector was created. This task was completed on 1 July 2015.

- The GFM Task Organization Prototype GUI is shown in Fig. 3. Based on a mission need, the commander will be able to select the following:

  o   the required platoons (22 different types) or companies

  o   the requirements type (equipment/MOS/combination of both)

  o   the results echelon (brigade/battalion/platoon/company)

o the desired number of results (1–5)

  ✓ From there, the prototype will calculate the capability vector and then return the best unit(s) that fulfill the mission tasks. Additionally, please note that the answer might be that there is no answer.

Fig. 3   Prototype task organization GUI interface

3.3.19   Walkthrough

After the submit button is pressed, if it is successful it will come back with a table representing the answers found, or lack thereof (Fig. 4).

On the left is the column that contains the Equipment and MOS Code/Field names for which there are counts for. The MOS Fields can be expanded to show the contained MOS Code rows held underneath.

The next column is the Requirements Vector column (in blue). This represents the aggregate counts of each type of Equipment or MOS Code that was asked for by selecting counts of requirements above.

The answers (in green) are sorted from left to right (most fitting to least fitting). The answers show the corresponding instance EwID long name in the header, along with the EwID. The answers also display the counts of Equipment and MOS Codes/Fields in each cell.

Fig. 4   Prototype task organization GUI interface results

When an MOS Field row is expanded, the MOS Codes with counts held underneath are shown (Fig. 5).

Fig. 5   Prototype task organization GUI interface results—MOS expanded

When the Show # Extraneous Rows button is selected, the rows that have positive counts in the answers but not in the Requirements Vector are shown. These are the extra things pulled in by the answers that were not asked for (Fig. 6).

Fig. 6   Prototype task organization GUI interface results—extraneous results

4.   Prototype Test and Evaluation

4.1 Background

Given the dynamics associated with this program, a spiral software development approach (Fig. 7) was selected as the appropriate software development paradigm. The spiral development approach allowed us to quickly develop a prototype and easily incorporate new changes throughout the lifecycle.
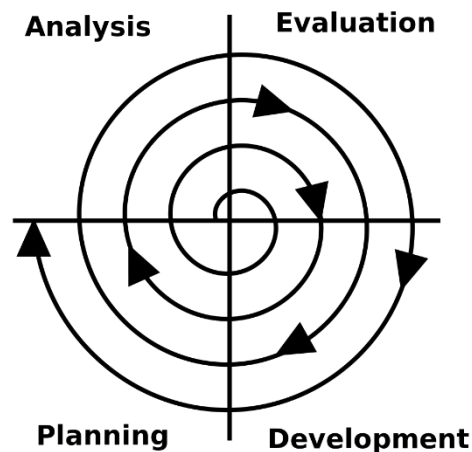
Fig. 7   Spiral software development

We first set out to determine whether or not our equipment-type task organizing prototype tool was functioning as intended; are we developing the right program and are we developing the program right. To accomplish this, we decided to compare and contrast the results from the prototype against information obtained from the Automated GFM Tool (AGT).

In the following sections we will discuss the prototype, AGT, our methodology, and whether or not our assumption that the prototype was operating as intended was valid.

4.2 Barriers and Risks

The search capability is dependent on accurate and honest renditions of equipment, platforms, and personnel within the GFM DI construct. To support a search application beyond the confines of a single service lexicon, a standardized (or at least a well understood) vocabulary must universally exist in the GFM DI type and instantiated attribute data. For instance, suppose we decide that a mechanized infantry company could perform a task. How do we know the assets of a "typical" mechanized company? One way would be use of the GFM DI mechanized infantry company template (type data) if one exists. To tell the commander what forces he should use, we examine the companies under his command (instance). Yet, service implementations of the methodology differ in their fundamental usage of GFM DI. Specifically, the services have adopted a wide interpretation in the deployment of force templates, making these reflect colloquial nuance instead of universal data representation tenants. Establishment of this condition may be difficult without proper oversight.

4.3 Method

To determine whether or not our prototype tool was functioning as intended, the team used data from the AGT to collect the (Unique Identifier Code) UIC's for like organizations (1st and 5th Air Defense Artillery) and quasi-like organizations (Stryker vs. Light Brigades). From there, the team was able to take the UIC's, use iChart to convert them into their corresponding EwID's, and finally use the EwID's to calculate their respective authorized equipment capability vectors. This process was then repeated multiple times to ensure the accuracy of the results.

4.4 Results

To verify and validate the results, it was determined that the best method to go about this was to compare and contrast battalions. The team decided to select 2 similar battalions, for which we expected similar results, and 2 slightly different battalions, for which we expected different results. The expected results held true, which provided us with a good baseline from which to draw future conclusions on.

Figures 8 and 9 show that 2 similar battalions (1st BN 1st ADA vs. 5th BN 7th ADA) have the same exact authorized equipment counts in the 19 different categories as each other and the same exact MOS codes. As both battalions were similar, this answer was what we expected and helped confirm that that the GFM Search Capability Tool was working correctly.
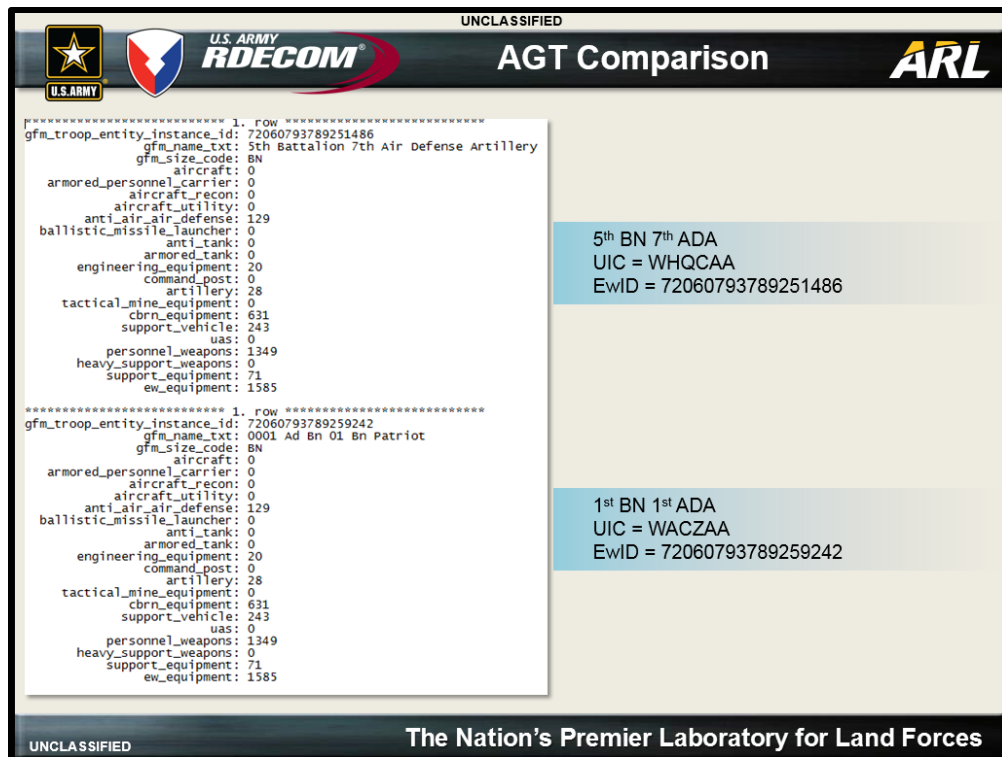
Fig. 8   AGT results 1

Fig. 9   AGT results 2

27
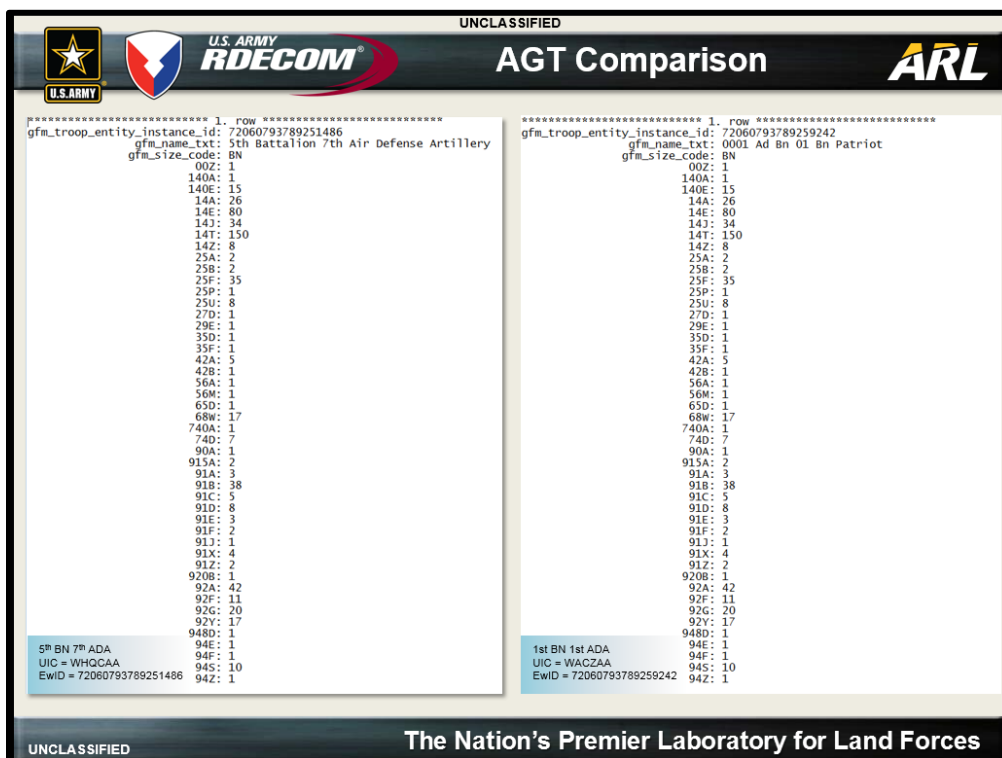
Figures 10 and 11 and Table 1 show that 2 different battalions (2nd BDE Light Infantry vs. 3rd BDE Combat Team) have different authorized equipment counts in most of the 19 different categories and the different MOS codes. Although the battalions were similar in nature, they had different equipment due to their specialties. For example, if you examine the 2nd BDE Light Infantry, you will notice that it has 326 authorized "Armored Personnel Carrier" and 27 authorized "Armored Tanks" (compared to the 3rd BDE Combat Team which has 0 for both). If you now refer to Appendix E and Table 1, you will see the specific equipment for those categories highlighted. As it turns out, the Light Infantry contains Strykers and Armored Tanks whereas the Combat Team does not. Again, this answer was what we expected and helped confirm that that GFM Search Capability Tool was working correctly.
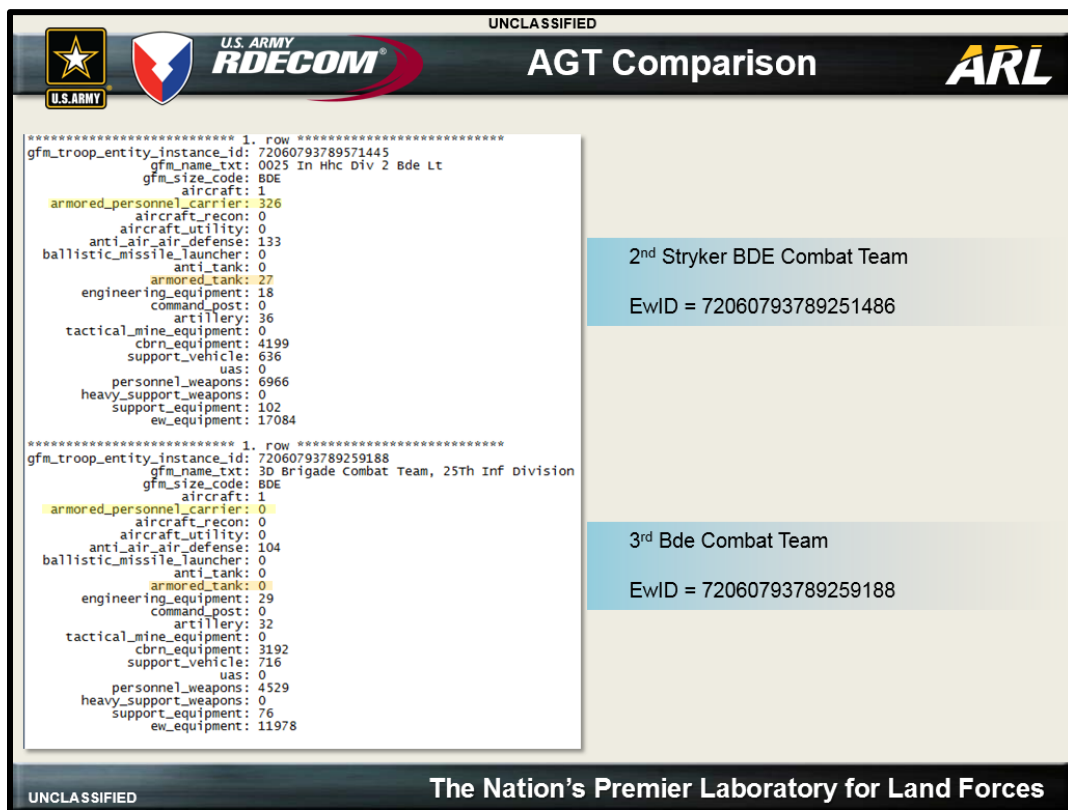
Fig. 10   AGT results 3
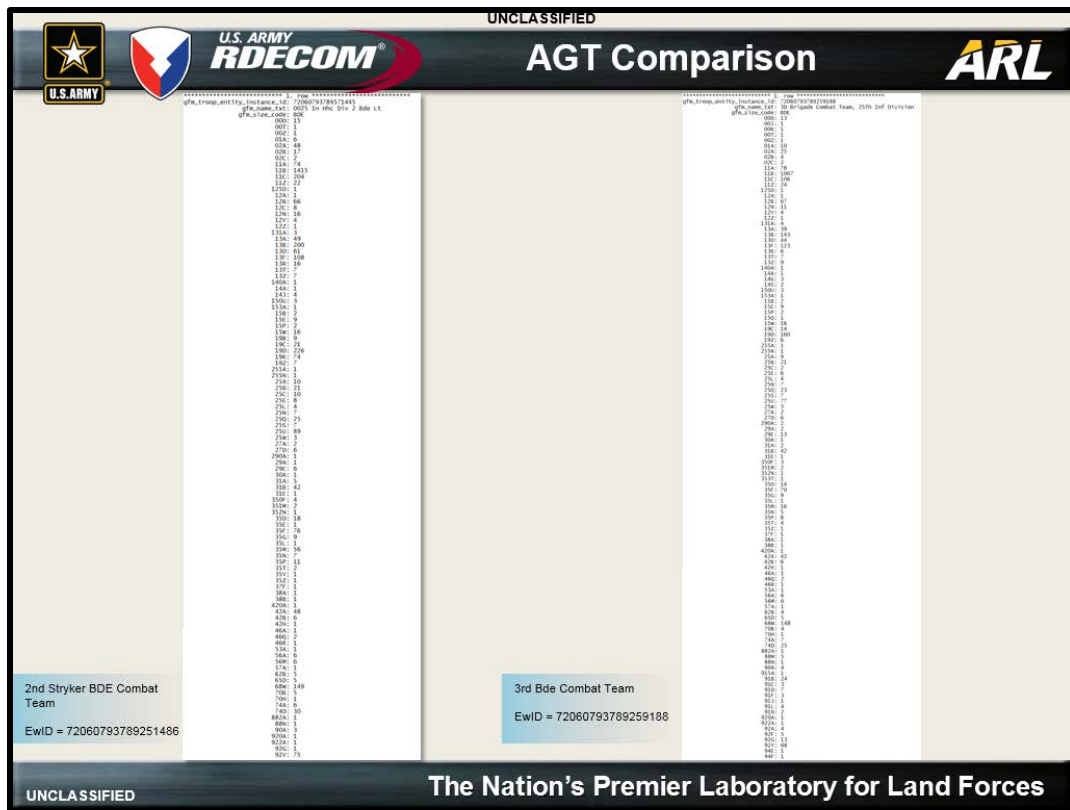
Fig. 11   AGT results 4

Table 1   Strykers and armored tanks breakout

EwID	Equipment count	Equipment type
010002E90005CF11	128	INFANTRY CARRIER: VEHICLE (ICV) LIN J22626
010002E90005DB59	51	RECONNAISSANCE VEH: (RV) LIN R62673
010002E90005D3CB	36	MORTAR CARRIER VEHICLE: (MCV) LIN M53369
010002E90005C7BB	31	COMMAND VARIANT VEH: (CV) LIN C41314
010002E90005D3DD	27	MOBILE GUN SYSTEM: (MGS) LIN M57720
010002E90005D34B	16	MEDICAL EVACUATION VEHICLE: (MEV) LIN M30567
010002E90005CF0A	13	FIRE SUPPORT VEHICLE: (FSV) LIN F86821
010002E90005D2AB	12	ENGINEER SQUAD VEHICLE: (ESV) LIN J97621
010002E90005C59F	9	ANTI-TANK GUIDED MISSILE VEH: (ATGM) LIN A83852
010002E90005C5BB	6	ARMORED SECURITY VEHICLE: WHEELED W/MOUNT (ASV) LIN A93374
010002E90005D5B6	3	NUCLEAR BIO CHEM RECON VEH: (NBC RV) LIN N96543

4.5 Review

Our original assumption that our task organizing prototype tool was functioning correctly was proven valid. This experiment is a first step at examining how to locate the best force structures for performing specified mission task organization.

5. Conclusion

The task-based search showed the utility of the GFM DI beyond being a comprehensive catalog of force structures by enabling unit staff personnel to fulfill some important FFIR planning requirements. Specifically, by answering the questions of which on hand units (or set of units) can best fulfill mission tasks. The creation of this capacity set the stage for follow-on research to incorporate search parameters that include context, METT-TC capabilities, and unit readiness, making this search engine a true contextually based mission planning tool.

Appendix A. Representative Enumerated Data Type Selection Matrix

Unredacted Data Type Selection		
type_name	**Value**	**Description**
DS139_mat_type_cat_code	CM	CONSUMABLE-MATERIEL-TYPE: A MATERIEL-TYPE that is an expendable class of supply.
DS139_mat_type_cat_code	EQ	EQUIPMENT-TYPE: A MATERIEL-TYPE that is not intended for consumption.
DS139_mat_type_cat_code	NOS	Not otherwise specified: The appropriate value is not in the set of specified values.
DS334_eqpt_type_cat_code	AIRCFT	AIRCRAFT-TYPE: An EQUIPMENT-TYPE that is designed to fly.
DS334_eqpt_type_cat_code	CBRNEQ	Chemical, biological, radiological and nuclear (CBRN)-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed for specialized roles in detecting, decontaminating or reconnoitering nuclear, biological, chemical (NBC) (CBRN) materiel.
DS334_eqpt_type_cat_code	ELCTRN	ELECTRONIC-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed to use electronic processing to realize its primary function.
DS334_eqpt_type_cat_code	ENGEQ	ENGINEERING-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed to accomplish engineering functions.
DS334_eqpt_type_cat_code	MISCEQ	MISCELLANEOUS-EQUIPMENT-TYPE: An EQUIPMENT-TYPE whose designed function does not fit in any other defined category.
DS334_eqpt_type_cat_code	MRTMEQ	MARITIME-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed to be used in a maritime environment.
DS334_eqpt_type_cat_code	RAIL	RAILCAR-TYPE: An EQUIPMENT-TYPE that is designed to operate on rail tracks.
DS334_eqpt_type_cat_code	VEHCLE	VEHICLE-TYPE: An EQUIPMENT-TYPE that is designed to operate on land routes (other than rail) with a primary role of transporting personnel, equipment or supplies.
DS334_eqpt_type_cat_code	VESSEL	VESSEL-TYPE: An EQUIPMENT-TYPE that is designed to operate on or under the water surface.
DS334_eqpt_type_cat_code	WEPTYP	WEAPON-TYPE: An EQUIPMENT-TYPE of any kind used in warfare or combat to attack and overcome an enemy.
DS336_acft_type_cat_code	AIRRW	Rotary wing: A machine or device capable of atmospheric flight and dependent on rotating blades for lift.
DS336_acft_type_cat_code	FIXWNG	Fixed wing: A machine or device capable of atmospheric flight and dependent on wings for lift.
DS336_acft_type_cat_code	LGTAIR	Lighter than air: A machine or device capable of atmospheric flight weighing less than the air it displaces.
DS336_acft_type_cat_code	NKN	Not known: It is not possible to determine which value is most applicable.
DS336_acft_type_cat_code	NOS	Not otherwise specified: The appropriate value is not in the set of specified values.
DS336_acft_type_cat_code	SPACEM	Space vehicle: An aircraft capable of operating in the region beyond the earth s atmosphere.
DS339_elceqpt_type_cat_cd	C3I	C3I: Equipment specifically designed to be used for Command, Control, Communications and Intelligence (C3I) support.
DS339_elceqpt_type_cat_cd	COM	Communication: A group of interrelated communications equipment utilizing the electromagnetic spectrum for the transmission and/or receiving of speech and data information.

DS339_elceqpt_type_cat_cd	DPE	Data-processing: Equipment for storing, sharing and manipulation of data.
DS339_elceqpt_type_cat_cd	EW	Electronic warfare: An equipment used for military action involving the use of electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum and action to retain its effective use by friendly forces.
DS339_elceqpt_type_cat_cd	FRC	Fire control: A group of interrelated fire control equipment and/or instruments designed for use with a weapon or group of weapons.
DS339_elceqpt_type_cat_cd	NAV	Navigation: A group of interrelated navigation equipment and/or instruments designed to aid in movement from one point to another.
DS339_elceqpt_type_cat_cd	NKN	Not known: It is not possible to determine which value is most applicable.
DS339_elceqpt_type_cat_cd	NOS	Not otherwise specified: The appropriate value is not in the set of specified values.
DS339_elceqpt_type_cat_cd	PAS	Public address system: A device capable of delivering voice messages.
DS339_elceqpt_type_cat_cd	RADAR	Radar: Radio equipment based on emission of radio waves toward an object and analysis of the waves returned by that object or emitted in response to excitation by the received waves.
DS339_elceqpt_type_cat_cd	SEN	Sensor: A device that detects or measures a physical property and records, indicates, or otherwise responds to it.
DS341_engeqpt_type_cat_cd	BRDLVA	Bridge launching vehicle, armored: A bridge that is carried on an armored vehicle and is deployed from the vehicle for immediate use.
DS341_engeqpt_type_cat_cd	BRDVEH	Bridge vehicle: A vehicle used to deliver a bridge.
DS341_engeqpt_type_cat_cd	BRIDGG	Bridging: Equipment designed for the crossing of gaps and other obstacles.
DS341_engeqpt_type_cat_cd	CNSTVE	Construction vehicle: A vehicle generally used in the construction trade.
DS341_engeqpt_type_cat_cd	CONST	Construction: An equipment used to build a facility.
DS341_engeqpt_type_cat_cd	CRANE	Crane: A machine for raising and lowering heavy weights; in its usual form it consists of a vertical post capable of rotation on its axis, a projecting arm or 'jib' over which passes the chain or rope from which the weight is suspended, and a barrel round.
DS341_engeqpt_type_cat_cd	DITCHR	Ditcher: A machine used to make ditches.
DS341_engeqpt_type_cat_cd	DOZER	Dozer: A heavy caterpillar tractor fitted with a broad steel blade in front, used for removing obstacles, leveling uneven surfaces, etc.
DS341_engeqpt_type_cat_cd	ERTHMV	Earthmover: A vehicle designed for the excavation or shifting of large quantities of earth.
DS341_engeqpt_type_cat_cd	GRADER	Grader: A wheeled machine for leveling the ground.

INTENTIONALLY LEFT BLANK.

Appendix B. Reduced Type Data Matrix

Designation	cat_code	type_name	Value	Description
AIRCRAFT	AIRCFT	DS334_eqpt_type_cat_code	AIRCFT	AIRCRAFT-TYPE: An EQUIPMENT-TYPE that is designed to fly.
AIRCRAFT	AIRCFT	DS4366_acft_type_manning_code	MANNED	Manned: The AIRCRAFT-TYPE is designed to be manned.
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	PHOTO	Photo mapping: An aircraft that produces a photograph or photomosaic upon which the grid lines, marginal data, contours, place names, boundaries, and other data may be added.
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	RECECM	Reconnaissance, electronic counter measure (ECM): An aircraft intended to obtain by detection means information about the ECM activities and resources of an enemy or potential enemy in a particular area.
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	RECPHO	Reconnaissance, photographic: An aircraft intended to obtain, by photographic means information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	RECRAD	Reconnaissance, radar: The role of the aircraft is to obtain, by radar detection methods information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	RECVIS	Reconnaissance, visual: The role of the aircraft is to obtain, visual information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular

AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	RECCE	Reconnaissance: An aircraft intended to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic c
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	SCOUT	Scout: An aircraft collecting intelligence without engaging enemy forces to participate in the close in security of a force.
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	SINGA	Signals intelligence gathering: An aircraft designed and equipped primarily for the purpose of intercepting and gathering electronic and communications transmissions for intelligence purposes.
AIRCRAFT (RECON)	AIRCFT	DS4368_acft_type_main_purp_cd	TGTREL	Target/relay, reconnaissance: An aircraft capable of obtaining information about the activities and resources of a target.
AIRCRAFT (UTILITY)	AIRCFT	DS4365_acft_type_arfrm_dsgn_cd	HELO	Helicopter: A rotary wing aircraft capable of atmospheric flight and dependent on rotating blades for lift.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	PSG	Passenger airlift: An aircraft used for the transport of passengers.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	RCALIB	Radio/radar calibration: An aircraft that flies a specific route to calibrate radars and radios.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	SAR	Search and rescue: An aircraft designed and equipped to look for and bring back any lost, incapacitated or captured person or group of persons.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	SOF	Special operations forces: An aircraft used for the transport of members of special operation forces.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	SPCPRP	Special purpose: An aircraft designed for a singular purpose.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	STOR	Storage: An aircraft under care and maintenance.

				Tanker: An aircraft used for carrying fuel in bulk, esp. for the aerial refueling of other aircraft.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	TANKER	Tanker: An aircraft used for carrying fuel in bulk, esp. for the aerial refueling of other aircraft.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	TOWTGT	Tow target: An aircraft capable of towing a target.
AIRCRAFT (UTILITY)	AIRCFT	DS4368_acft_type_main_purp_cd	UTILTY	Utility: Multi-purpose aircraft capable of carrying troops but may be used in a command and control, logistics, casualty evacuation or armed aircraft role.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS342_weapon_type_cat_code	AD	Air-defense: A weapon specifically designed for the engagement of aircraft.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADCAN	Air-defense automatic cannon: An automatic cannon, usually linked to remote sensors, used primarily in the role of air defense.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADHEV	Air-defense gun, heavy: A heavy gun used primarily in the role of air defense.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADLGT	Air-defense gun, light: A light gun used primarily in the role of air defense.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADMED	Air-defense gun, medium: A medium gun used primarily in the role of air defense.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADGUN	Air-defense gun: A gun used primarily in the role of air defense.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADMLLR	Air-defense missile launcher, long range: A structural device designed to support and hold a long range air defense missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADMLMR	Air-defense missile launcher, medium range: A structural device designed to support and hold a medium range air defense missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADMLSR	Air-defense missile launcher, short range: A structural device designed to support and hold a short range air defense missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADMLT	Air-defense missile launcher, theatre: A structural device designed to support and hold a theatre air defense missile in position for firing.

ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	ADMIS	Air-defense missile launcher: A structural device designed to support and hold an air defense missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	CINWPS	Close in weapon system: An anti-aircraft weapon system employed, as a last resort, in the air defense role.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	SAMISL	Surface-to-air missile launcher: A structural device designed to support and hold a surface to air missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	SSMLLR	Surface-to-surface missile launcher, long range: A structural device designed to support and hold a long range surface to surface missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	SSMLMR	Surface-to-surface missile launcher, medium range: A structural device designed to support and hold a medium range surface to surface missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	SSMLSR	Surface-to-surface missile launcher, short range: A structural device designed to support and hold a short range surface to surface missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	SSMIS	Surface-to-surface missile launcher: A structural device designed to support and hold a surface to surface missile in position for firing.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	AAARTR	Antiaircraft artillery: An antiaircraft weapon employed in the air defense role.
ANTI AIR (AIR DEFENSE)	WEPTYP	DS343_weapon_type_subcat_code	AAMGUN	Antiaircraft machine gun: An antiaircraft gun, normally belt fed, employed in the air defense role.
ANTI TANK	WEPTYP	DS342_weapon_type_cat_code	AT	Antitank: A weapon specifically designed for the engagement of armored vehicles.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGRLH	Antitank grenade launcher, heavy: A heavy structural device designed to support and hold an antitank grenade in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGRLL	Antitank grenade launcher, light: A light structural device designed to support and hold an antitank grenade in position for firing.

ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGRLM	Antitank grenade launcher, medium: A medium structural device designed to support and hold an antitank grenade in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGRLC	Antitank grenade launcher: A structural device designed to support and hold an antitank grenade in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGNHV	Antitank gun, heavy: A heavy gun designed to destroy tanks.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGNLT	Antitank gun, light: A light gun designed to destroy tanks.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGNMD	Antitank gun, medium: A medium gun designed to destroy tanks.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATGUN	Antitank gun: A gun designed to destroy tanks.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATMLHV	Antitank missile launcher, heavy: A heavy structural device designed to support and hold an antitank missile in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATMLLT	Antitank missile launcher, light: A light structural device designed to support and hold an antitank missile in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATMLMD	Antitank missile launcher, medium: A medium structural device designed to support and hold an antitank missile in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATMIS	Antitank missile launcher: A structural device designed to support and hold an antitank missile in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATRLHV	Antitank rocket launcher, heavy: A heavy structural device designed to support and hold an antitank rocket in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATRLLT	Antitank rocket launcher, light: A light structural device designed to support and hold an antitank rocket in position for firing.
ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATRLMD	Antitank rocket launcher, medium: A medium structural device designed to support and hold an antitank rocket in position for firing.

ANTI TANK	WEPTYP	DS343_weapon_type_subcat_code	ATROC	Antitank rocket launcher: A structural device designed to support and hold an antitank rocket in position for firing.
ARMORED PERSONNEL CARRIER	WEPTYP	DS343_weapon_type_subcat_code	AIFV	Armored infantry fighting/combat vehicle: An armored vehicle used for transporting an infantry team and able to support it by the use of weapons.
ARMORED PERSONNEL CARRIER	WEPTYP	DS343_weapon_type_subcat_code	ARV	Armored reconnaissance vehicle: A lightly armored, highly mobile vehicle, serving as the main reconnaissance in infantry and airborne operations.
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	APCREC	Armored personnel carrier, recovery: A vehicle designed to recover armored personnel carriers.
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	APC	Armored personnel carrier: A lightly armored, highly mobile vehicle, amphibious and air-droppable, used primarily for transporting personnel and their individual equipment during tactical operations.
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	ARMRCC	Armored reconnaissance carrier: An armored vehicle used to carry persons for reconnaissance activities.
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	ASSVEH	Assault vehicle: A vehicle designed to carry assault troops.
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	HALFTR	Half-track: A vehicle, usually military, with wheels in front and tracks in the rear.
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	ARVELT	Armored vehicle, light: [No definition given in APP-6A]
ARMORED PERSONNEL CARRIER	VEHCLE	DS348_veh_type_cat_code	ARMORD	Armored: A vehicle that has some form of ballistic protection (excluding tanks).
ARMORED TANK	WEPTYP	DS342_weapon_type_cat_code	TANK	Tank: An armored vehicle whose principal weapon is a direct fire gun optimized for the destruction of armored vehicles.
ARMORED TANK	WEPTYP	DS343_weapon_type_subcat_code	RECTNK	Reconnaissance tank: A mobile armored vehicle providing firepower and crew protection for reconnaissance activities.

ARMORED TANK	WEPTYP	DS343_weapon_type_subcat_code	BTNKHE	Battle-tank, heavy: An armored fighting vehicle of more than 50 metric tons which, as its primary function, is designed to close with the enemy and engage their armor and infantry with direct fire.
ARMORED TANK	WEPTYP	DS343_weapon_type_subcat_code	BTNKLI	Battle-tank, light: An armored fighting vehicle of less than 20 metric tons which, as its primary function, is designed to close with the enemy and engage their armor and infantry with direct fire.
ARMORED TANK	WEPTYP	DS343_weapon_type_subcat_code	BTNKME	Battle-tank, medium: An armored fighting vehicle of more than 20 and less than 50 metric tons which, as its primary function, is designed to close with the enemy and engage their armor and infantry with direct fire.
ARMORED TANK	WEPTYP	DS343_weapon_type_subcat_code	TKDTRY	Tank destroyer: A tracked vehicle that relies on speed and firepower and has minimum armored protection, usually armed with either antitank guided missile launcher, 80 to 90-mm gun, or a recoilless rifle.
ARMORED TANK	VEHCLE	DS348_veh_type_cat_code	BTHVRE	Battle tank, heavy, recovery: A vehicle designed to recover heavyweight battle tanks.
ARMORED TANK	VEHCLE	DS348_veh_type_cat_code	BTLTRE	Battle tank, light recovery: A vehicle designed to recover lightweight battle tanks.
ARMORED TANK	VEHCLE	DS348_veh_type_cat_code	BTMDRE	Battle tank, medium, recovery: A vehicle designed to recover medium weight battle tanks.
ARMORED TANK	VEHCLE	DS348_veh_type_cat_code	BTMDRE	Battle tank, medium, recovery: A vehicle designed to recover medium weight battle tanks.
ARTILLERY	WEPTYP	DS342_weapon_type_cat_code	CANNON	Cannon: A weapon for firing projectiles, having a heavy metal tube installed on a carriage or mounting.
ARTILLERY	WEPTYP	DS342_weapon_type_cat_code	FA	Field artillery: Artillery that is self-propelled or towed for use in the field in support of maneuver forces.
ARTILLERY	WEPTYP	DS342_weapon_type_cat_code	MISSYS	Missile system: A system designed to launch one or more powered guided objects at a target.

ARTILLERY	WEPTYP	DS342_weapon_type_cat_code	MORTAR	Mortar: A portable, muzzle-loading cannon used to fire shells at low velocities, short ranges, and high trajectories.
ARTILLERY	WEPTYP	DS342_weapon_type_cat_code	RCKART	Rocket artillery: A system designed to launch one or more powered unguided objects at a target.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	ASSGUN	Assault gun: A cannon, with a relatively long barrel, operating with a relatively low angle of fire, and having a high muzzle velocity.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	ARTHEV	Artillery, heavy: [No definition given in APP-6A]
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	ARTLGT	Artillery, light: [No definition given in APP-6A]
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	ARTMED	Artillery, medium: [No definition given in APP-6A]
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	ARTVHV	Artillery, very heavy: Heavy artillery, caliber of 211 MM or larger, for use in the field in support of maneuver forces.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	GCML	Guided cruise missile launcher: A structural device designed to support and hold a guided cruise missile in position for firing.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	GUNHOW	Gun/howitzer: A cannon that has the capability of both low-angle and high-angles of fire.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	HOWTHV	Howitzer, heavy: A heavy cannon that combines certain characteristics of guns and mortars. Normally a cannon with a tube length of 20 to 30 calibers.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	HOWTLT	Howitzer, light: A light cannon that combines certain characteristics of guns and mortars. Normally a cannon with a tube length of 20 to 30 calibers.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	HOWTMD	Howitzer, medium: A medium cannon that combines certain characteristics of guns and mortars. Normally a cannon with a tube length of 20 to 30 calibers.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	HOWIT	Howitzer: A cannon that combines certain characteristics of guns and mortars. Normally a cannon with a tube length of 20 to 30 calibers.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MRTHEV	Mortar, heavy: [No definition given in APP-6A]
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MRTLGT	Mortar, light: [No definition given in APP-6A]

ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MRTMED	Mortar, medium: [No definition given in APP-6A]
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MRTVHV	Mortar, very heavy: [No definition given in APP-6A]
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MLRSHV	Multiple rocket launcher, heavy: A heavy structural device designed to support and hold multiple rockets in position for firing.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MLRSLT	Multiple rocket launcher, light: A light structural device designed to support and hold multiple rockets in position for firing.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MLRSMD	Multiple rocket launcher, medium: A medium structural device designed to support and hold multiple rockets in position for firing.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	MLRS	Multiple rocket launcher: A structural device designed to support and hold multiple rockets in position for firing.
ARTILLERY	WEPTYP	DS343_weapon_type_subcat_code	FFART	Fixed fortification artillery: Guns inside a fortress.
BALLISTIC MISSILE LAUNCHER	WEPTYP	DS343_weapon_type_subcat_code	BMLLR	Ballistic missile launcher, long range: A structural device designed to support and hold a long-range ballistic missile in position for firing.
BALLISTIC MISSILE LAUNCHER	WEPTYP	DS343_weapon_type_subcat_code	BMLMR	Ballistic missile launcher, medium range: A structural device designed to support and hold a medium-range ballistic missile in position for firing.
BALLISTIC MISSILE LAUNCHER	WEPTYP	DS343_weapon_type_subcat_code	BMLSR	Ballistic missile launcher, short range: A structural device designed to support and hold a short-range ballistic missile in position for firing.
CBRN EQUIPMENT	CBRNEQ	DS334_eqpt_type_cat_code	CBRNEQ	CBRN-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed for specialized roles in detecting, decontaminating or reconnoitering NBC (CBRN) materiel.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	ABIDET	Automated biological detector: An unattended biological detection and alarm system.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	ABICHM	Automated chemical and biological agent detector: An unattended chemical and biological detection and alarm system.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	ACHDET	Automated chemical detector: An unattended chemical detection and alarm system.

				Biological integrated detector: An integrated biological detection, alarm, and identification system.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	BIOINT	
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	BIOSTO	Biological stand-off detection system: A detector capable of remotely detecting biological contamination.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	CBRNDC	CBRN decontamination vehicle: A vehicle that, as its primary function, is equipped to decontaminate persons or equipment contaminated by an NBC (CBRN) exposure.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	CBRNRC	CBRN reconnaissance vehicle: A vehicle that, as its primary function, is equipped to perform by visual observation or other detection methods, information a particular area potentially contaminated by an NBC (CBRN) event.
CBRN EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	CHMMON	Chemical agent monitor: A handheld chemical agent detector.
COMMAND POST	VEHCLE	DS348_veh_type_cat_code	CMDPTA	Command post, armored: An armored vehicle designed to be used as a command post or as part of a command post.
COMMAND POST	VEHCLE	DS348_veh_type_cat_code	CMDPTW	Command post, wheeled: A wheeled, nonarmored vehicle, designed to be used as a command post or as part of a command post.
COMMAND POST	VEHCLE	DS348_veh_type_cat_code	CMDPST	Command post: A vehicle designed to be used as a command post or as part of a command post.
ENGINEERING EQUIPMENT	ENGEQ	DS334_eqpt_type_cat_code	ENGEQ	ENGINEERING-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed to accomplish engineering functions.
ENGINEERING EQUIPMENT	ENGEQ	DS339_elceqpt_type_cat_cd	SEN	Sensor: A device that detects or measures a physical property and records, indicates, or otherwise responds to it.
ENGINEERING EQUIPMENT	VEHCLE	DS348_veh_type_cat_code	CEVEH	Combat engineer vehicle: No definition provided in ADatP-3 BL 12 FFIRN/FUD 1650/006.
ENGINEERING EQUIPMENT	VEHCLE	DS348_veh_type_cat_code	ENGNOS	Engineering, not otherwise specified: A vehicle used by engineers, without any other precision.
ENGINEERING EQUIPMENT	VEHCLE	DS348_veh_type_cat_code	TRUCKD	Truck, dump: A truck having a body that tilts and opens for unloading materials

EW EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	FRC	Fire control: A group of interrelated fire control equipment and/or instruments designed for use with a weapon or group of weapons.
EW EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	DPE	Data-processing: Equipment for storing, sharing and manipulation of data.
EW EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	C3I	C3I: Equipment specifically designed to be used for Command, Control, Communications and Intelligence (C3I) support.
EW EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	COM	Communication: A group of interrelated communications equipment utilizing the electromagnetic spectrum for the transmission and/or receiving of speech and data information.
EW EQUIPMENT	ELCTRN	DS334_eqpt_type_cat_code	ELCTRN	ELECTRONIC-EQUIPMENT-TYPE: An EQUIPMENT-TYPE that is designed to use electronic processing to realize its primary function.
EW EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	EW	Electronic warfare: An equipment used for military action involving the use of electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum and action to retain its effective use by friendly forces.
EW EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	RADAR	Radar: Radio equipment based on emission of radio waves toward an object and analysis of the waves returned by that object or emitted in response to excitation by the received waves.
EW EQUIPMENT	AIRCFT	DS4368_acft_type_main_purp_cd	ECMJAM	Electronic countermeasures (Jammer): An aircraft that operates in a division of electronic warfare involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum through the use of electromagnetic energy.
EW EQUIPMENT	AIRCFT	DS4368_acft_type_main_purp_cd	ELCCNM	Electronic countermeasures: An aircraft that operates in a division of electronic warfare involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum through the use of electromagnetic energy.

				Electronic warfare: An aircraft designed for military action to exploit the electromagnetic spectrum encompassing: the search for, interception and identification of electromagnetic emissions, and the employment of electromagnetic energy
EW EQUIPMENT	AIRCFT	DS4368_acft_type_main_purp_cd	EW	Electronic warfare: An aircraft designed for military action to exploit the electromagnetic spectrum encompassing: the search for, interception and identification of electromagnetic emissions, and the employment of electromagnetic energy
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	FLAMET	Flame-thrower: A weapon that projects incendiary fuel and has provision for ignition of this fuel.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	GRLNHV	Grenade launcher, heavy: A heavy structural device designed to support and hold a grenade in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	GRLNLT	Grenade launcher, light: A light structural device designed to support and hold a grenade in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	GRLNMD	Grenade launcher, medium: A medium structural device designed to support and hold a grenade in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	GRENLN	Grenade launcher: A structural device designed to support and hold a grenade in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	MACGHV	Machine gun, heavy: A heavy automatic gun giving continuous fire.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	MACGLT	Machine gun, light: A light automatic gun giving continuous fire.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	MACGUN	Machine gun: An automatic gun giving continuous fire.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	SRKLHV	Single rocket launcher, heavy: A heavy structural device designed to support and hold a rocket in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	SRKLLG	Single rocket launcher, light: A light structural device designed to support and hold a rocket in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	SRKLMD	Single rocket launcher, medium: A medium structural device designed to support and hold a rocket in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	SRCLAU	Single rocket launcher: A structural device designed to support and hold a rocket in position for firing.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	DFGNMD	Direct fire gun, medium: [No definition given in APP-6A]

HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	RECGUN	Recoilless gun: A weapon capable of being fired from either a ground mount or from a vehicle, and capable of destroying tanks.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	TKGUNH	Tank gun, heavy: Heavy, turret mounted, tank gun, caliber over 120 mm, for use in the field against tanks.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	TKGUNL	Tank gun, light: Light, turret mounted, tank gun, caliber under 90 mm, for use in the field against tanks.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	TKGUNM	Tank gun, medium: Medium, turret mounted, tank gun, caliber between 90 and 120 mm, for use in the field against tanks.
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	DFGNHV	Direct fire gun, heavy: [No definition given in APP-6A]
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	DFGNLT	Direct fire gun, light: [No definition given in APP-6A]
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	DFGN	Direct fire gun: [No definition given in APP-6A]
HEAVY SUPPORT WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	GUN	Gun: A cannon with a relatively long barrel, operating with a relatively low angle of fire, and having a high muzzle velocity.
PERSONNEL WEAPONS	WEPTYP	DS334_eqpt_type_cat_code	WEPTYP	WEAPON-TYPE: An EQUIPMENT-TYPE of any kind used in warfare or combat to attack and overcome an enemy.
PERSONNEL WEAPONS	WEPTYP	DS342_weapon_type_cat_code	SMARMS	Small arms: Individual portable weapon for defensive purposes.
PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	MCHPTL	Machine pistol: A small hand-held firearm capable of giving continuous fire.
PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	PISTOL	Pistol/revolver: A small hand-held firearm.
PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	RFLASS	Rifle, assault: A firearm used in an assault role that has a rifled bore designed to be fired from the shoulder.
PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	RFLCRB	Rifle, carbine: A short firearm, usually a rifle that has a rifled bore designed to be fired from the shoulder.
PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	RIFLE	Rifle: A firearm that has a rifled bore designed to be fired from the shoulder.
PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	SHOTGU	Shotgun: A smooth-bore gun for firing small pellets at short range.

PERSONNEL WEAPONS	WEPTYP	DS343_weapon_type_subcat_code	SUBMAC	Submachine gun: A lightweight automatic or semiautomatic gun.
SUPPORT EQUIPMENT	ELCTRN	DS339_elceqpt_type_cat_cd	NAV	Navigation: A group of interrelated navigation equipment and/or instruments designed to aid in movement from one point to another.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	SMKGEN	Smoke generator: A system used to generate smoke in the battlespace.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	TANK	Tank: A large receptacle or storage chamber, especially for liquid or gas.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	HAZLGT	Hazard light: A light source that is designed to identify the source or location of a hazard.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	LAMP	Lamp: An equipment that is used to provide light to illuminate the location of an equipment (e.g., a buoy).
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	SRCHLT	Searchlight: An electric arc-lamp fitted with a reflector and suspended in a frame so that it may throw a beam of light in any desired direction; used in naval defense and for signaling purposes, etc.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	SIGLGT	Signal light: A light source designed to be used for communication using a predefined code system of on and off flashes.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	GUIDNC	Guidance: Equipment used to show the way or direct movement.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	GENER	Generator: An apparatus for the production of electricity.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	LINE	Line: A piece of rope, cord, wire serving a special purpose.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	ROPE	Rope: A piece of stout cord made of twisted strands of hemp, sisal, cotton, nylon, wire or other similar material.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	CABLE	Cable: A strong thick rope of hemp or wire.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	CABLER	Cable, reel: A large roll of strong thick rope of hemp or wire wound onto a drum or spindle.
SUPPORT EQUIPMENT	MISCEQ	DS344_msceqpt_type_cat_cd	LAPSE	Low altitude parachute extraction system: No definition provided in AdatP-3 Baseline 11.
SUPPORT EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	ARDDET	Automated radiation detector: An unattended radiation detector.

				Radiation spectrometer: An apparatus used for recording and measuring a radiation energy spectra, especially as a method
SUPPORT EQUIPMENT	CBRNEQ	DS345_cbrn_eqpt_type_cat_cd	RDSPTR	of analysis.
SUPPORT VEHCLE	VEHCLE	DS334_eqpt_type_cat_code	VEHCLE	VEHICLE-TYPE: An EQUIPMENT-TYPE that is designed to operate on land routes (other than rail) with a primary role of transporting personnel, equipment or supplies.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	TRAILR	Trailer: A vehicle designed to be towed by another.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	TRANSG	Transporter, general: A vehicle whose primary role is the transportation of heavy equipment.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	TRANST	Transporter, tank: A vehicle whose primary role is the transportation of main battle tanks.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	WRCKR	Wrecker: A vehicle used in recovering a damaged one.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	HETVEH	Heavy equipment transport: A vehicle designed to carry cumbersome or heavy items.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	AMBUL	Ambulance: A vehicle for conveying sick, wounded, incapacitated, or injured persons.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	ASSV	Armored service support: An armored vehicle mainly used for maintenance, recovery, ambulance functions or resupply.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	AUTOMO	Automobile: A self-propelled passenger vehicle.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	CSVEH	Combat support vehicle: No definition provided in ADatP-3 BL 12 FFIRN/FUD 1650/006.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	CCTRCK	Cross-country truck: An automotive vehicle designed to be used off road for transporting loads.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	GNLPRP	General purpose: A vehicle designed for multiple uses.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	MAINT	Maintenance: A vehicle which, as its primary function, is designed to provide equipment support facilities in or out of the battlespace.
SUPPORT VEHCLE	VEHCLE	DS348_veh_type_cat_code	MHVEH	Materiel handling: A vehicle which, as its primary, is designed to provide materiel handling facilities in or out of the battlespace.

				Military utility: A small, sturdy, four-wheel-drive army vehicle, used chiefly for reconnaissance; a similar vehicle in nonmilitary
SUPPORT VEHICLE	VEHCLE	DS348_veh_type_cat_code	MILUV	use.
SUPPORT VEHICLE	VEHCLE	DS348_veh_type_cat_code	SPCPRP	Special purpose: A vehicle specifically designed for special use.
SUPPORT VEHICLE	VEHCLE	DS348_veh_type_cat_code	TRUCK	Truck: An automotive vehicle used for transporting loads.
SUPPORT VEHICLE	VEHCLE	DS348_veh_type_cat_code	UTILTY	Utility: A small, sturdy, four-wheel-drive vehicle, used chiefly for reconnaissance; a similar vehicle in nonmilitary use.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MINCLR	Mine clearer: A vehicle whose purpose is to remove or destroy mines.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MNLYAR	Mine layer, armored vehicle mounted: An armored vehicle whose purpose is to lay mines.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MNLYTR	Mine layer, trailer mounted: A trailer whose purpose is to lay mines.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MINLYR	Mine layer: A vehicle whose purpose is to lay mines.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MINECL	Mine-clearing: An equipment whose purpose is to remove or destroy mines.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MINEDT	Mine-detection: An equipment whose purpose is to detect the presence of mines.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MINEMR	Minefield marking: An equipment used to delimit a minefield.
TACTICAL MINE EQUIPMENT	ENGEQ	DS341_engeqpt_type_cat_cd	MINLAY	Mine-laying: An equipment whose purpose is to lay mines.
UAS	AIRCFT	DS4366_acft_type_manning_code	UNMNRP	Unmanned not remotely piloted: The AIRCRAFT-TYPE is designed to be unmanned and not remotely piloted.
UAS	AIRCFT	DS4366_acft_type_manning_code	UNMRP	Unmanned remotely piloted: The AIRCRAFT-TYPE is designed to be unmanned and remotely piloted.
UAS	AIRCFT	DS4366_acft_type_manning_code	UNMANN	Unmanned: The AIRCRAFT-TYPE is designed to be unmanned.
UAS	AIRCFT	DS4368_acft_type_main_purp_cd	DRONL	Drone launch: An aircraft used for the launch of drones.

I<small>NTENTIONALLY LEFT BLANK.</small>

Appendix C. Task Organization Platoon Types

Initial Platoon Task Organization Listing

EwID	Short name	Full Name
72060793885816536	ASLT PLT	ASSAULT PLATOON
72060793841127090	CBRN PLT	CHEM / BIO PLATOON
72060793792144085	CBT ENG	COMBAT ENGINEER PLATOON
72060793831201302	COMMO PLT	COMMO PLATOON
72060793883497913	EOD PLT	EXPLOSIVE ORDNANCE DISPOSAL PLATOON
72060793844637984	POL/H20	FUEL AND WATER PLATOON
72060793867830345	ISR	INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE PLT
72060793885227539	MAINT	MAINTENANCE PLATOON
72060793844637387	MEDEVAC	MEDICAL EVACUATION PLATOON
72060793838044873	MEDICAL	MEDICAL PLATOON
72060793789233505	MP	MILITARY POLICE PLATOON
72060793842253169	MORT	MORTAR PLATOON
72060793838998000	FRC PROVID	QUARTERMASTER PLATOON (FORCE PROVIDER)
72060793839076379	RECCE	RECONNAISSANCE PLATOON
72060793842253256	RIFLE	RIFLE PLATOON
72060793843510085	MTD RIFLE	RIFLE PLATOON MOUNTED PLATOON
72060793933331226	CLR PLT	ROUTE CLEARANCE PLATOON
72060793840703078	SIGINT	SIGINT PLATOON
72060793845594072	SNIPER	SNIPER PLATOON
72060793845573089	TAC HUMINT	TACTICAL HUMAN INTELLIGENCE PLATOON
72060793792144105	640 MI PLT	640TH INTERPRETER TRANSLATOR PLATOON
72060793844637921	TRNPTN	TRANSPORTATION PLATOON

Appendix D. Military Operational Series Codes

Military occupational specialty (MOS)	MOS description or title
00A	Duties Unassigned
00B	General Officer
00C	Relieved from Duty; Sick in Hospital or Quarters
00D	Newly Commissioned Officers Awaiting Entry on Active Duty for Officer Basic Course Attendance
00E	Student Officer
01A	Officer Generalist
01B	Aviation/Infantry/Armor/MI Immaterial
01C	Chemical/Engineer/MP Immaterial
02A	Combat Arms Generalist
02B	Infantry/Armor Immaterial
02C	Infantry/Armor/Field Artillery/Engineer Immaterial
03A	Infantry/Armor Immaterial
05A	Army Medical Department
09G	National Guard on Active Duty Medical Hold
09H	US Army Reserve on Active Duty Medical Hold
001A	Unqual in Auth WO MOS
002A	Patient
003A	Student
004A	Duties Unassigned
011A	Brch/MOS Immaterial
019G	National Guard on Active Duty Medical Hold
019H	US Army Reserve on Active Duty Medical Hold
00D	Special Duty Assignment
00F	MOS Immaterial National Guard Bureau (NGB)
00G	MOS Immaterial US Army Reserve (USAR)
00S	Special Duty Assignment AFSC
00Z	Command Sergeant Major
09B	Trainee Unassigned
09C	Trainee Language
09D	College Trainee
09G	National Guard (NG) on Active Duty Medical Hold
09H	US Army Reserve (USAR) on Active Duty Medical Hold
09J	GED Completion Program

09M	March 2 Success
09N	Nurse Corps Candidate
09R	Simultaneous MBR Program
09S	Commissioned Officer Candidate
09T	College Student Army National Guard Officer Program
09U	Prior Service or Branch Transfer without Defined MOS
09W	Warrant Officer Candidate
11A	Infantry Officer
11B	Infantryman (includes soldiers formerly designated 11M [Mechanized] and 11H [Anti-armor]) 11B Infantryman are the standard infantry soldiers; the main combatants of the Army.
11C	Indirect Fire Infantryman (Mortarman)
11X	Undetermined Infantry (Open Enlistment Option, B/C determined during training.)
11Z	Infantry Senior Sergeant
12A	Engineer, General
120A	Construction Engineer Technician
125D	Geospatial Information Technician
12B	Combat Engineer -
12C	Bridge Crewmember
12D	Diver
12G	Quarrying Specialist
12H	Construction Engineering Supervisor
12K	Plumber
12M	Firefighter
12N	Horizontal Construction Engineer
12P	Prime Power Production Specialist
12Q	Power Line Distribution Specialist (RC)
12R	Interior Electrician
12T	Technical Engineer
12V	Concrete and Asphalt Equipment Operator
12W	Carpentry and Masonry Specialist
12X	General Engineering Supervisor
12Y	Geospatial Engineer
12Z	Combat Engineering Senior Sergeant
13A	Field Artillery Officer
131A	Field Artillery Targeting Technician
13B	Cannon Crewmember
13C	Tactical Automated Fire Control Systems Specialist

13D	Field Artillery Tactical Data Systems Specialist
13E	Cannon Fire Direction Specialist
13F	Fire Support Specialist
13M	Multiple Launch Rocket System/High Mobility Artillery Rocket System Crewmember
13P	MLRS Operational Fire Direction Specialist
13R	Field Artillery Firefinder Radar Operator
13T	Field Artillery Surveyor/Meteorological Crewmember
13Z	Field Artillery Senior Sergeant
14A	Air Defense Artillery Officer
140A	Command and Control Systems Integrator
140E	Air and Missile Defense (AMD) Tactician/Technician (Patriot Systems Technician)
140Z	Air Defense Artillery (ADA) Immaterial
14E	PATRIOT Fire Control Enhanced Operator/Maintainer
14G	Air Defense Battle Management System Operator
14H	Air Defense Enhanced Early Warning System Operator
14S	Air and Missile Defense Crewmember
14T	PATRIOT Launching Station Enhanced Operator/Maintainer
14Z	Air Defense Artillery (ADA) Senior Sergeant
15A	Aviation Officer
15B	Aviation Combined Arms Operations
15C	Aviation All-Source Intelligence Officer
15D	Aviation Maintenance Officer
150A	Air Traffic and Air Space Management Technician
150U	Unmanned Aircraft Systems Operations Technician
151A	Aviation Maintenance Technician (Nonrated)
152B	OH-58A/C Scout Pilot (RC)
152C	OH-6 Pilot
152D	OH-58D Pilot
152E	RAH-66/ARH-70 Pilot [ARH Project Cancelled]
152F	AH-64A Attack Pilot
152G	AH-1 Attack Pilot (RC)
152H	AH-64D Attack Pilot
153A	Rotary Wing Aviator (Aircraft Nonspecific)
153B	UH-1 Pilot (RC)
153C	OH-58A/C Observation Pilot [Discontinued]
153D	UH-60 Pilot
153E	MH-60 Pilot

153L	UH-72A Pilot
153M	UH-60M Pilot
154A	CH-54 Pilot [Discontinued]
154B	CH-47A/B/C Pilot [Discontinued]
154C	CH-47D Pilot
154E	MH-47 Pilot
154F	CH-47F Pilot
155A	Fixed Wing Aviator (Aircraft Nonspecific)
155D	U-21 Pilot [Discontinued]
155E	C-12 Pilot
155F	Jet Aircraft Pilot (C-20F/J,)
155G	O-5A/EO-5B/RC-7 Pilot
156A	OV-1/RV-1 Pilot [Discontinued]
15B	Aircraft Powerplant Repairer
15D	Aircraft Powertrain Repairer
15E	Unmanned Aircraft Systems Repairer
15F	Aircraft Electrician
15G	Aircraft Structural Repairer
15H	Aircraft Pneudraulics Repairer
15J	OH-58D Armament/Electrical/Avionics Systems Repairer
15K	Aircraft Components Repair Supervisor
15M	UH-1 Helicopter Repairer (RC)
15N	Avionic Mechanic
15P	Aviation Operations Specialist
15Q	Air Traffic Control Operator
15R	AH-64 Attack Helicopter Repairer
15S	OH-58D/ARH Helicopter Repairer
15T	UH-60 Helicopter Repairer
15U	CH-47 Helicopter Repairer
15V	Observation/Scout Helicopter Repairer (RC)
15W	Unmanned Aerial Vehicle Operator
15X	AH-64A Armament/Electrical/Avionics Systems Repairer
15Y	AH-64D Armament/Electrical/Avionic Systems Repairer
15Z	Aircraft Maintenance Senior Sergeant
17A	Cyber Operations Officer
170A	Cyber Operations Technician
17C	Cyber Operations Specialist
18A	Special Forces Officer
180A	Special Forces Warrant Officer

18B	Special Forces Weapons Sergeant
18C	Special Forces Engineer Sergeant
18D	Special Forces Medical Sergeant
18E	Special Forces Communications Sergeant
18F	Special Forces Assistant Operations & Intelligence Sergeant
18X	Special Forces Candidate
18Z	Special Forces Senior Sergeant
19A	Armor, General
19B	Armor
19C	Cavalry
19D	Cavalry Scout
19K	M1 Armor Crewman
19Z	Armor/Cavalry Scout First Sergeant and Sergeant Major
24A	Telecommunications Systems Engineer
24X	Designated Telecommunications Systems Engineer
25A	Signal, General
251A	Information Systems Technician
255A	Information Services Technician
255N	Network Management Technician
255S	Information Protection Technician
255Z	Senior Network Operations Technician
25B	Information Technology Specialist
25C	Radio Operator-Maintainer
25D	Cyber Network Defender
25E	Electromagnetic Spectrum Manager
25F	Network Switching Systems Operator-Maintainer
25L	Cable Systems Installer-Maintainer
25M	Multimedia Illustrator
25N	Nodal Network Systems Operators-Maintainer
25P	Microwave Systems Operator/Maintainer
31N	Multichannel Transmission Systems Operator-Maintainer
25R	Visual Information Equipment Operator-Maintainer
25S	Satellite Communication Systems Operator-Maintainer
25T	Satellite/Microwave Systems Chief
25U	Signal Support Systems Specialist
25V	Combat Documentation/Production Specialist
25W	Telecommunications Operations Chief
25X	Chief Signal NCO
25Z	Visual Information Operations Chief

27A	Judge Advocate
27B	Military Judge
270A	Legal Administrator
27G	Paralegal Specialist
29A	Electronic Warfare Officer
290A	Electronic Warfare Technician
29E	Electronic Warfare Specialist
30A	Information Operations Officer
31A	Military Police
311A	CID Special Agent
31B	Military Police
31D	CID Special Agent
31E	Internment/Resettlement Specialist
31K	Working Dog Handler
34A	Strategic Intelligence Officer
35D	All Source Intelligence Officer
35E	Counterintelligence Officer
35F	Human Intelligence Officer
35G	Signals Intelligence Officer
350F	All Source Intelligence Technician
350G	Imagery Intelligence Technician
351Z	Attaché Technician
351L	Counterintelligence Special Agent (Technician)
351M	Human Intelligence Collection Technician
351Y	Area Intelligence Technician
352N	Signal Intelligence Analysis Technician
352S	Signals Collector Technician
353T	Intelligence Systems Maintenance Technician
09L	Interpreter/Translator
35F	Intelligence Analyst
35G	Geospatial Intelligence Imagery Analyst
35L	Counterintelligence Special Agent
35M	Human Intelligence Collector
35N	Signals Intelligence Analyst
35P	Cryptologic Linguist
35Q	Cryptologic Network Warfare Specialist
35S	Signals Collector/Analyst
35T	Military Intelligence Systems Maintainer/Integrator
35X	Intelligence Senior Sergeant/Chief Intelligence Sergeant

35Y	Chief Counterintelligence/Human Intelligence Sergeant
35Z	Signals Intelligence (Electronic Warfare) / Senior Sergeant/ Chief
36A	Financial Manager
36B	Financial Management Technician
37A	Psychological Operations
37X	Psychological Operations, Designated
37F	Psychological Operations Specialist
38A	Civil Affairs
38X	Civil Affairs, Designated
38B	Civil Affairs Specialist
40A	Space Operations
40C	Army Astronaut
42B	Human Resources Officer
42C	Army Bands
42H	Senior Human Resources Officer
420A	Human Resources Technician
420C	Bandmaster
42A	Human Resources Specialist
42F	Human Resource Information Systems Management Specialist -No Longer a MOS-
42R	Musician
42S	Special Band Member
79R	Recruiter Noncommissioned Officer
79S	Career Counselor
79T	Recruiting and Retention NCO (ANG)
79V	Retention and Transition NCO (USAR)
46A	Public Affairs, General
46X	Public Affairs, General
46Q	Public Affairs Specialist
46R	Public Affairs Broadcast Specialist
46Z	Chief Public Affairs NCO
47A	USMA, Professor
47C	USMA, Professor of English
47D	USMA, Professor of Electrical Engineering and Computer Science
47E	USMA, Professor of Law
47F	USMA, Professor of Systems Engineering
47G	USMA, Professor of Foreign Languages
47H	USMA, Professor of Physics
47J	USMA, Professor of Social Sciences

47K	USMA, Professor of History
47L	USMA, Professor of Behavioral Sciences and Leadership
47M	USMA, Professor of Chemistry
47N	USMA, Professor of Mathematical Sciences
47P	USMA, Professor of Geography and Environmental Engineering
47Q	USMA, Professor and Associate Dean
47R	USMA, Professor of Civil and Mechanical Engineering
47S	USMA, Professor of Physical Education
47T	USMA, Professor of Leader Development and Organizational Learning
47U	USMA, Professor of Military Art and Science
48B	Latin America
48C	Europe
48D	South Asia
48E	Eurasia
48F	China
48G	Mideast/North Africa
48H	Northeast Asia
48I	Southeast Asia
48J	Africa, South of the Sahara
48X	Foreign Area Officer
49A	Operations Research/Systems Analysis
49W	Trained, ORSA
49X	Untrained, ORSA
50A	Force Development
51A	Program Management
51C	Contract Management
51R	Systems Automation Acquisition and Engineering
51S	Research and Engineering
51T	Test and Evaluation
51Z	Acquisitions
51C	Acquisition, Logistics & Technology (AL&T) Contracting NCO
53A	Information Systems Management
53X	Designated Systems Automation
57A	Simulation Operations
56A	Command and Unit Chaplain
56D	Clinical Pastoral Educator
56X	Chaplain Candidate
56M	Chaplain Assistant
59A	Strategist

60A	Operational Medicine
60B	Nuclear Medicine Officer
60C	Preventive Medicine Officer
60D	Occupational Medicine Officer
60F	Pulmonary Disease/Critical Care Officer
60G	Gastroenterologist
60H	Cardiologist
60J	Obstetrician and Gynecologist
60K	Urologist
60L	Dermatologist
60M	Allergist, Clinical Immunologist
60N	Anesthesiologist
60P	Pediatrician
60Q	Pediatric Sub-Specialist
60R	Child Neurologist
60S	Ophthalmologist
60T	Otolaryngologist
60U	Child Psychiatrist
60V	Neurologist
60W	Psychiatrist
61A	Nephrologist
61B	Medical Oncologist/Hematologist
61C	Endocrinologist
61D	Rheumatologist
61E	Clinical Pharmacologist
61F	Internist
61G	Infectious Disease Officer
61H	Family Medicine
61J	General Surgeon
61K	Thoracic Surgeon
61L	Plastic Surgeon
61M	Orthopedic Surgeon
61N	Flight Surgeon
61P	Physiatrist
61Q	Radiation Oncologist
61R	Diagnostic Radiologist
61U	Pathologist
61W	Peripheral Vascular Surgeon
61Z	Neurosurgeon

62A	Emergency Physician
62B	Field Surgeon
63A	General Dentist
63B	Comprehensive Dentist
63D	Periodontist
63E	Endodontist
63F	Prosthodontist
63H	Public Health Dentist
63K	Pediatric Dentist
63M	Orthodontist
63N	Oral and Maxillofacial Surgeon
63P	Oral Pathologist
63R	Executive Dentist
64A	Field Veterinary Service
64B	Veterinary Preventive Medicine
64C	Veterinary Laboratory Animal Medicine
64D	Veterinary Pathology
64E	Veterinary Comparative Medicine
64F	Veterinary Clinical Medicine
64Z	Senior Veterinarian (Immaterial)
640A	Food Safety Officer
65A	Occupational Therapy
65B	Physical Therapy
65C	Dietitian
65D	Physician Assistant
65X	Specialist Allied Operations
66B	Community Health Nurse
66C	Psychiatric/Mental Health Nurse
66E	Perioperative Nurse
66F	Nurse Anesthetist
66G	Obstetrics and Gyneco
66H	Medical-Surgical Nurse
66N	Generalist Nurse
66P	Family Nurse Practitioner
67A	Health Services
67B	Laboratory Sciences
67C	Preventive Medicine Sciences
67D	Behavioral Sciences
67E	Pharmacy

67F	Optometry
67G	Podiatry
67J	Aeromedical Evacuation
670A	Health Services Maintenance Technician
68A	Biomedical Equipment Specialist
68B	Orthopedic Specialist
68C	Practical Nursing Specialist-(equal to an LPN)
68D	Operating Room Specialist
68E	Dental Specialist
68F	Physical Therapy Specialist
68G	Patient Administration Specialist
68H	Optical Laboratory Specialist
68J	Medical Logistics Specialist
68K	Medical Laboratory Specialist
68M	Nutrition Care Specialist
68N	Cardiovascular Specialist
68P	Radiology Specialist
68Q	Pharmacy Specialist
68R	Veterinary Food Inspection Specialist
68S	Preventive Medicine Specialist
68T	Animal Care Specialist
68U	Ear, Nose, and Throat (ENT) Specialist
68V	Respiratory Specialist
68W	Healthcare Specialist (Combat Medic) -(equal to an EMT)
68X	Behavioral Health Specialist
68Y	Eye Specialist
68Z	Chief Medical NCO
70A	Health Care Administration
70B	Health Services Administration
70C	Health Services Comptroller
70D	Health Services Systems Management
70E	Patient Administration
70F	Health Services Human Resources
70H	Health Services Plans, Operations, Intelligence, Security, and Training
70K	Health Services Materiel
71A	Microbiology
71B	Biochemistry
71E	Clinical Laboratory
71F	Research Psychology

72A	Nuclear Medical Science
72B	Entomology
72C	Audiology
72D	Environmental Science and Engineering
73A	Social Work
73B	Clinical Psychology
74A	Chemical, General
74B	Chemical Operations and Training (to be del Oct 2010)
74C	Chemical Munitions and Materiel Management (to be del Oct 2010)
740A	Chemical, Biological, Radiological and Nuclear (CBRN) Warrant Officer
74D	Chemical, Biological, Radiological and Nuclear (CBRN) Specialist
90A	Multifunctional Logistician
88A	Transportation, General
88B	Traffic Management
88C	Marine and Terminal Operations
88D	Motor/Rail Transportation
880A	Marine Deck Officer
881A	Marine Engineering Officer
882A	Mobility Officer
88H	Cargo Specialist
88K	Watercraft Operator
88L	Watercraft Engineer
88M	Motor Transport Operator
88N	Transportation Management Coordinator
88P	Railway Equipment Repairer (RC)
88T	Railway Section Repairer (RC)
88U	Railway Operations Crew Member (RC)
88Z	Transportation Senior Sergeant
89E	Explosive Ordnance Disposal Officer
91A	Materiel Maintenance and Munitions Management Officer
890A	Ammunition Warrant Officer
913A	Armament Systems Maintenance Warrant Officer
914A	Allied Trades Warrant Officer
915A	Automotive Maintenance Warrant Officer
915E	Senior Automotive Maintenance Warrant Officer
919A	Engineer Equipment Maintenance Warrant Officer
948D	Electronic Missile Systems Maintenance Warrant Officer
948E	Senior Electronics Maintenance Warrant Officer
89A	Ammunition Stock Control and Accounting Specialist

89B	Ammunition Specialist
89D	Explosive Ordnance Disposal Specialist
91A	M1 Abrams Tank System Maintainer (formerly 63A)
91B	Wheeled Vehicle Mechanic (formerly 63B)
91C	Utilities Equipment Repairer (formerly 52C)
91D	Power Generation Equipment Repairer (formerly 52D)
91E	Allied Trades Specialist (formerly 91E and 91W)
91F	Small Arms/Towed Artillery Repairer (formerly 45B)
91G	Fire Control Repairer (formerly 45G)
91H	Track Vehicle Repairer (formerly 63H)
91J	Quartermaster and Chemical Equipment Repairer (formerly 63J)
91K	Armament Repairer (formerly 45K) MOS deleted in 2011
91L	Construction Equipment Repairer (formerly 62B)
91M	Bradley Fighting Vehicle System Maintainer (formerly 63T)
91P	Self Propelled Artillery Systems Maintainer (formerly 63D)
91S	Stryker Systems Maintainer
91X	Maintenance Supervisor (formerly 63X)
91Z	Senior Maintenance Supervisor (formerly 63Z)
94A	Land Combat Electronic Missile System Repairer (formerly 27E)
94D	Air Traffic Control Equipment Repairer
94E	Radio & Communications Security (COMSEC) Equipment Repairer
94F	Computer/Detection Systems Repairer
94H	Test Measurement and Diagnostic Equipment (TMDE) Maintenance Support Specialist
94M	Radar Repairer
94P	Multiple Launch Rocket System (MLRS) Repairer (formerly 27M)
94R	Avionic and Survivability Repairer
94S	PATRIOT System Repairer
94T	AVENGER System Repairer
94W	Electronic Maintenance Chief
94X	Senior Missile Systems Maintainer
94Y	Integrated Family of Test Equipment (IFTE) Operator/Maintainer
94Z	Senior Electronic Maintenance Chief
92A	Quartermaster Officer
92D	Aerial Delivery and Materiel
920A	Property Accounting Technician
920B	Supply Systems Technician
921A	Airdrop Systems Technician
922A	Food Service Technician

923A	Petroleum Systems Technician
92A	Automated Logistical Specialist
92F	Petroleum & Supply Specialist
92G	Food Service Specialist
92L	Petroleum Laboratory Specialist
92M	Mortuary Affairs Specialist
92R	Parachute Rigger
92S	Shower/Laundry and Clothing Repair Specialist
92W	Water Treatment Specialist
92Y	Unit Supply Specialist
92Z	Senior Noncommissioned Logistician

INTENTIONALLY LEFT BLANK.

Appendix E. Brigade 2 Authorized Equipment Breakdown

EwID	Equipment count	Equipment type
010002E90005DA09	3173	RIFLE 5 56 MILLIMETER: M4 LIN R97234
010002E90005DD22	2728	SIGHT: REFLEX COLLIMATOR LIN S60288
010002E90005D111	2413	ILLUMINATOR: INFRARED LIN J03261
010002E90005D509	2384	MASK CHEMICAL BIOLOGICAL: M40 LIN M12418
010002E90005C82E	2212	BAYONET MULTIPURPOSE SYSTEM: XM9 LIN B49004
010002E90005D728	1862	NIGHT VISION: GOGGLE LIN N05482
010002E90005D6E0	1492	MONOCULAR NIGHT VISION DEVICE: AN/PVS-14 LIN M79678
010002E90005E77F	1194	COMPUTER SYSTEM DIGITAL: AN/PYQ-10(C) LIN Z00384
010002E90005C82F	1193	BAYONET-KNIFE: W/SCABBARD FOR M16A1 RIFLE LIN B49272
010002E90005D52D	1192	MASK CHEMICAL BIOLOGICAL: COMBATVEHICLE M42 LIN M18526
010002E90005E9FE	1167	LAND MOBILE RADIO: (LMR) LIN Z00862
010002E90005D5B2	1139	NAVIGATION SET: SATELLITE SIGNALS AN/PSN-13 LIN N96248
010002E90005C85F	769	BINOCULAR: MODULAR CONSTRUCTION MIL SCALE RETI CLE 7X50 MM W/E LIN B67766
010002E90005D8D7	675	PJH SURFACE VEHICLE RADIO SET: AN/VSQ-2(V) LIN P49587
010002E90005EE57	624	SIGHT BORE OPTICAL: M150 LIN S45729
010002E90005DBA3	573	HEAVY WEAPON THERMAL SIGHT (HWTS): AN/PAS-13(V)3LIN S90603
010002E90005EDF7	500	COMPUTER SET: DIGITAL AN/UYK-128(V)1 LIN Z01247
010002E90005D81C	469	RADIAC SET: AN/VDR-2 LIN R20684
010002E90005DBA1	432	MEDIUM WEAPON THERMAL SIGHT (MWTS): AN/PAS-13(V)2 LIN S90535
010002E90005C678	420	ALARM: CHEMICAL AGENT AUTOMATIC M22 LIN A33020
010002E90005D74F	400	PISTOL 9MM AUTOMATIC: M9 LIN P98152
010002E90005D6CB	387	MOUNT TRIPOD MACHINE GUN: HEAVY CALIBER 50 LIN M75577
010002E90005D50A	387	MOUNT MACHINE GUN: 40MM MK93 LIN M12647
010002E90005D46F	355	LAUNCHER GRENADE: M203A2 LIN L69012
010002E90005CC59	353	DRIVERS ENHANCERS: AN/VAS-5 LIN D41659
010002E90005C58E	339	ANTENNA GROUP: OE-254()/GRC LIN A79381
010002E90005D84D	330	RADIAC SET: AN/UDR-13 LIN R31061
010002E90005DB33	267	REEL EQUIPMENT: CE-11 LIN R56742
010002E90005D9A3	267	RADIO SET: AN/VRC-91F(C) LIN R68146
010002E90005D3E8	264	MOUNT TRIPOD MACH GUN 7.62MM: LIN M60256
010002E90005DB17	249	RADIO SET: AN/VRC-92F(C) LIN R45543
010002E90005EDB8	248	RADIO SET: HAND HELD RADIO LIN Z01320
010002E90005D70E	241	MACHINE GUN: 7.62MM M240B LIN M92841
010002E90005CB70	234	COMPASS MAGNETIC UNMOUNTED: MIL GRADUATIONS LIN E63728
010002E90005DDB0	231	SHOTGUN 12 GAUGE RIOT TYPE: 20 INCH BARREL LIN T39223
010002E90005D9A1	229	RADIO SET: AN/VRC-90F(C) LIN R68044
010002E90005D9D7	228	RADIO SET: AN/PRC-119F(C) LIN R83141
010002E90005D4F2	209	MACHINE GUN 5.56 MILLIMETER: M249 LIN M09009
010002E90005DD23	204	SIGHT: THERMAL AN/PAS-13B(V)1 LIN S60356

010002E90005DE34	198	TELESCOPE: STRAIGHT LIN T60185
010002E90005DE49	164	TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 TON 4 X4 W/E (HMMWV) LIN T61494
010002E90005C6EE	154	COMPUTER SET: AN/UYK-128(V)3 LIN C18378
010002E90005C741	152	COMPUTER SYSTEM: DIGITAL AN/TYQ-105(V)1 LIN C27503
010002E90005CD1D	148	ELECTRONIC TEST SET: TS-4348/UV LIN E03826
010002E90005D70B	136	MACHINE GUN GRENADE 40MM: MK19 MOD III LIN M92362
010002E90005CAC1	133	COMMAND LAUNCH UNIT: (JAVELIN) 13305405-119 LIN C60750
010002E90005CF11	128	INFANTRY CARRIER: VEHICLE (ICV) LIN J22626
010002E90005D897	120	POWER SUPPLY: PP-6224/U LIN P40750
010002E90005C83D	107	BATTLEFIELD ANTI-INTRUSION SYSTE: AN/PRS-9 LIN B57077
010002E90005C683	102	AIMING LIGHT INFRARED: AN/PAQ-4 LIN A34938
010002E90005E127	96	LIGHT TACTICAL TRAILER: 3/4 TON LIN T95992
010002E90005C8C4	95	MONITOR CHEMICAL AGENT: LIN C05701
010002E9000F51AC	93	RADIO ST: AN/VRC-104(V)3 150 WATT W/PRC-150 HF RADIO LIN R87139
010002E90005D6C2	84	MOUNT GUN: RING CAL .50 LIN M74364
010002E90005E1B0	82	MES COMBAT MEDIC: LIN U65480
010002E90005DB35	82	RADIO SET: AN/PSC-5 LIN R57606
010002E90005E283	81	TOWBAR MOTOR VEHICLE: WHEELED VEHICLE LIN W69528
010002E90005D6C7	79	MINI EYESAFE LASER INFRARED OBSERVATION SET (M ELIOS): AN/PVS-6 LIN M74849
010002E90005DB10	72	RADIO SET: AN/VRC-89F(C) LIN R44999
010002E90005DE52	69	TRUCK CARGO: MTV W/E LIN T61908
010002E90005CAF4	68	CABLE TELEPHONE: WF-16/U LIN C69541
010002E90005DABE	64	SURVEILLANCE SYSTEM: SCOUT LONG RANGE AN/TAS-8 LIN S02976
010002E900DD0DE6	58	MACHINE GUN: CALIBER 50 LIN M39331
010002E90005C849	52	BORESIGHTING EQUIPMENT WEAPON: SMALL ARMS M30 LIN B60351
010002E90005CD4B	52	FREQ HOPING MLTIPLEX: TD-1456VRC LIN F99520
010002E9000E39B0	51	PROCESSOR GROUP SIG DATA: (CAISI 2.0) OL-701A/ TYQ LIN P99881
010002E90005DB59	51	RECONNAISSANCE VEH: (RV) LIN R62673
010002E90005E2D1	49	TOOL KIT ELECTRIC EQUIPMENT: TK-101/GSQ LIN W37483
010002E90005DE4C	48	TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113 LIN T61630
010002E90005D5F7	48	PLOTTING BOARD INDIRECT FIRE: AZIMUTH LIN P07900
010002E90005DDB9	46	TAPE READER GENERAL PURPOSE: KOI-18/TSEC LIN T40405
010002E90005D4AF	43	MACHINE GUN CALIBER .50: HB FLEXIBLE (GROUND A ND VEHIC LE) W/E LIN L91975
010002E90005DF9B	42	SWITCHBOARD TELEPHONE MANUAL: SB-993/GT LIN U82529
010002E90005E2BD	42	TRAILER TANK: WATER 400 GALLON 1-1/2 TON 2 WHE EL W/E LIN W98825
010002E90005CD7C	40	GEN SET: DED SKID MTD 3KW 60HZ LIN G18358
010002E90005CD4E	40	DETECTING SET MINE: PTBL METALLIC (AN/PSS-11) LIN G02341
010002E90005C688	39	ALL SOURCE ANALYSIS SYSTEM: AN/TYQ-93 LIN A35329
010002E90005E029	39	TELEPHONE SET: TA-1/PT LIN V30252

010002E90005E5CD	37	ARMY H RESURCES: WRKSTATION LIN Z39781
010002E90005E126	37	TRAILER CARGO: HIGH MOBILITY 1-1/4 TON LIN T95924
010002E90005D3CB	36	MORTAR CARRIER VEHICLE: (MCV) LIN M53369
010002E90005C62F	35	AIMING CIRCLE: LIN A22496
010002E90005DA99	35	SAW CHAIN: GAS DRVN BAR FRAME W/ACCESS/COMPONE NTS LIN S35741
010002E90005ED4A	34	ILLUMINATOR INTEGRATED: SMALL ARMS STORM MLRF LIN J68653
010002E90005EE35	34	COMPUTER SYSEM: DIGITAL LIN C27963
010002E90005D849	33	RADIAC SET: AN/PDR-75 LIN R30925
010002E90005E125	32	TRAILER CARGO: MTV W/DROPSIDES M1095 LIN T95555
010002E90005C9BA	32	DISCHARGER: GRENADE SMOKE COUNTERMEASURE LIGHT WEIGHT M 7 LIN D15345
010002E90005C746	31	COMPUTER SYSTEM: DIGITAL AN/TYQ-109(V)1 LIN C27707
010002E90005C7BB	31	COMMAND VARIANT VEH: (CV) LIN C41314
010002E90005D353	30	M32 LIGHTWEIGHT HAND-HELD: MORTAR BALLISTIC CO MPUTER (LHMBC) LIN M32043
010002E90005DC26	29	TRUCK UTILITY: HEAVY VARIANT HMMWV 4X4 10000 G VW W/E LIN T07679
010002E90005E474	27	COMPUTER SYSTEM DIGITAL: AN/PSG-10(V) LIN Z00058
010002E90005DDF7	27	SIGHT BORE OPTICAL: LIN T45593
010002E90005CD35	27	DEMOLITION SET EXPLOSIVE: INITIATING ELECTRIC AND SEMI ELECTRIC LIN F91490
010002E90005D3DD	27	MOBILE GUN SYSTEM: (MGS) LIN M57720
010002E90005C89B	27	BORESIGHTING EQUIPMENT WEAPON: MUZZLE ALIGNMEN T M26 LIN B90426
010002E90005D70C	27	MACHINE GUN 7.62 MILLIMETER: FIXED RH FEED LIN M92420
010002E90005DE59	26	TEST KIT MASK PROTECTIVE: M41 LIN T62350
010002E90005CA67	26	DETECTING SET: MINE AN/PSS-14 LIN D03932
010002E90005E24A	25	TOOL KIT SMALL ARMS REPAIRMAN: ORDNANCE LIN W51910
010002E90005D9F8	25	RADIO TEST SET: AN/PRM-34() LIN R93169
010002E90005E2C6	24	TOOL KIT CARPENTERS: ENGINEER SQUAD W/CHEST LIN W34648
010002E90005D798	24	RADIO SET CONTROL: C-2328/GRA-39 LIN Q77755
010002E90005D376	23	MACHINE GUN: LIGHT 5.56MM M249 LIN M39263
010002E90005C935	23	COMPUTER: SYSTEM DIGITAL AN/PYQ-8 LIN C77823
010002E90005DDC5	21	TRUCK CARGO: MTV W/MHE W/E LIN T41203
010002E90005CA48	20	CONTROL REMOTE LANDMINE SYSTEM: M71 LIN C96840
010002E9000B6282	20	COMTER SYS DIG: AN/PSG-14(V)1 LFED LIN C04819
010002E90005DFA7	20	UTILITY RECEPTACLE: LIN U89185
010002E90005E990	19	ARMAMENT SUBSYSTEM: REMOTELY OPERATED LIN Z00751
010002E90005D325	19	MEDICAL EQUIPMENT SET GROUND AMBULANCE: LIN M26413
010002E90005C861	18	BINOCULAR: M25 LIN B67907
010002E90005EDDF	18	POWER PLANT: UTILITY (MEDIUM) LIN P63462
010002E90005D403	18	MORTAR 60 MILLIMETER: ON MOUNT M170 CANNON M22 5 W/E LIN M67939
010002E90005D0AC	18	HOWITZER MEDIUM TOWED: M777 LIN H57916
010002E90005D81D	18	RADAR CHRONOGRAPH SET: MVS CONVENTIONAL LIN R20758

010002E90005ECE1	18	FUZE SETTER: LIN F16879
010002E90005DDC3	18	TRUCK CARGO: MTV W/E W/W LIN T41135
010002E90005D5F4	18	PLOTTING BOARD INDIRECT FIRE: ARTILLERY/INFANT RY IN ME TERS LIN P07753
010002E90005DB40	17	RANGE FINDER-TARGET DESIGNATOR: LASER AN/PED-1 LIN R60282
010002E90005C6EB	17	COMPUTER SYSTEM: DIGITAL AN/PYQ-3 LIN C18312
010002E90005D99B	16	RADIO SET: AN/VRC-88F(C) LIN R67330
010002E90005D34B	16	MEDICAL EVACUATION VEHICLE: (MEV) LIN M30567
010002E90005ED65	16	SMALL UNMANNED AIRCRAFT SYSTEM (SUAS): RAVEN B (MIP) LIN S83835
010002E90005C879	16	BED CARGO: DEMOUNTABLE PLS 8X20 LIN B83002
010002E90005DB12	15	RIFLE SNIPER .50 CALIBER: M107 LIN R45351
010002E90005ED5F	15	RIFLE SNIPER: M110 LIN R45601
010002E9000BB746	15	SIGHT NIGHT VISION (SNS): AN/PVS-29 LIN S60342
010002E90005ED62	15	SPOTTING INSTRUMENT: OPTICAL LIN S08669
010002E90005DF75	14	TRUCK UTILITY: ECV ARMAMENT CARRIER W/IAP ARMO R READY M1151A1 LIN T34704
010002E90005C740	14	COMPUTER SYSTEM: DIGITAL AN/TYQ-129(V)2 LIN C27435
010002E90005ED3A	14	COMMAND SYSTEM: TACTICAL LIN C40996
010002E9000B6285	14	CT SY D: AN/PYG-1 LIN C53293
010002E900124CF5	13	COMPTER SET FIELD ARTILLERY GENERAL: AN/GYK-37 (V)4 LIN C01155
010002E90005CF0A	13	FIRE SUPPORT VEHICLE: (FSV) LIN F86821
010002E90005EDBE	13	COMPUTER SYST DIGITAL: AN/PYQ-12 LIN C18641
010002E90005CD6A	13	GEN SET: DED SKID MTD 5KW 60HZ LIN G11966
010002E90005C6ED	12	COMPUTER SET: DIGITAL AN/TYQ-106(V)1 LIN C18345
010002E90005D4D0	12	MORTAR 81 MILLIMETER: M252 LIN M02114
010002E90005D2AB	12	ENGINEER SQUAD VEHICLE: (ESV) LIN J97621
010002E90005CE46	11	GEN SET DED TM: 10KW 60HZ MTD ONM116A2 PU-798 LIN G42170
010002E90005C6DC	11	COMPUTER SET: AN/GYG-1(V)1 LIN C17936
010002E90005E116	10	TRAILER: PALLETIZED LOADING 8X20 LIN T93761
010002E90005D5FA	10	PLOTTING SET ARTILLERY FIRE CONTROL: MULT COMP W/SUPPL Y MANUAL LIN P09818
010002E90005CDAE	10	GENERATOR SET DIESEL: 60HZ AC MEP-531A LIN G36237
010002E90005C59F	9	ANTI-TANK GUIDED MISSILE VEH: (ATGM) LIN A83852
010002E90005CEB9	9	FEEDER SYSTEM ELECTRICAL: 3PH 100 AMP LIN F55621
010002E90005D317	9	MEDICAL EQUIPMENT SET CHEMICAL AGENT PATIENT T REATMENT : LIN M23673
010002E90005D34A	9	MEDICAL EQUIPMENT SET TACTICAL COMBAT MEDICAL CARE: LIN M30499
010002E90005E263	9	TOOL SET LIGHT ENGINEER SQUAD: LIN W59240
010002E90005CEB5	8	DISTRIBUTION SYSTEM ELEC: 120/208V 3PH 40AMP LIN F55485
010002E90005ECEE	8	RECEIVE SUITE: AN/TSR-8 LIN R30658
010002E90005CF35	8	INSTALLATION KIT: GRENADE LAUNCHER SMOKE UP AR MORED HM MWV 4-M7 LIN J33315

010002E90005DA1F	7	SPEECH SECURITY EQUIPMENT: TSEC/KY-57 LIN S01373
010002E90005CD25	7	ENCRYPTION-DECRYPTION EQUIPMENT: TACLANE KG 17 5LIN E08940
010002E90005ED3D	7	COMMAND CENTER SYSTEM: AN/TSQ-243 LIN C61665
010002E90005EDF8	7	COMPUTER SET: DIGITAL AN/GYK-62B LIN Z01248
010002E90005C689	6	ALL SOURCE ANALYSIS SYSTEM: AN/TYQ-93(V)2 LIN A35397
010002E90005CD17	6	ELECT KEY GEN DEDICATED LOOP ENCRYPTION DEVICE : TSEC/K G-84 LIN E03028
010002E90005CDEF	6	GEN SET: DED SKID MTD 10KW 60HZ LIN G74711
010002E90005DEE2	6	TOOL KIT: ELECTRONICS MAINTENANCE TK-17 LIN T57382
010002E90005C6E7	6	COMPUTER SET: DIGITAL AN/TYQ-107(V)1 LIN C18277
010002E90005E879	6	BATTALION COMMAND POST(SWITCHING GROUP): OM-XX XLIN Z00564
010002E90005E7AD	6	COMMUNICATION SUBSYSTEM: AN/USQ-165 LIN Z70024
010002E90005E80A	6	COMPUTER SYSTEM DIGITAL: AN/GYK-50B (ISYSCON) (V)4 LIN Z00513
010002E90005EDE0	6	POWER PLANT: ELETRIC TRAILER MOUNTED LIN P63530
010002E90005E129	6	TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOB W /LHS LIN T96496
010002E90005D463	6	LAUNCHER MINE CLEARING LINE CHARGE TRAILER MOU NTING: (MICLIC) LIN L67342
010002E90005CD14	6	CHASSIS TRAILER: GENERATOR 2-1/2 TON 2 WHEEL W /ELIN E02807
010002E90005E0A6	6	TRACTOR FULL TRACKED HIGH SPEED: DEPLOYABLE LT ENGINEE R (DEUCE) LIN T76541
010002E90005DA0B	6	RIGID WALL SHELTER: COMMAND POST LIN R98145
010002E90005E10D	6	MAINTENANCE SUPPORT DEVICE: LIN T92889
010002E90005D930	6	PURGING KIT FIRE CONTROL: ORG MAINT LIN P70517
010002E90005E231	6	TOOL KIT ARTILLERY MECHANICS: ORD LIN W32182
010002E90005D4AE	6	MACHINE GUN CALIBER .50: HEAVY FIXED TURRET TY PELIN L91701
010002E90005C5BB	6	ARMORED SECURITY VEHICLE: WHEELED W/MOUNT (ASV)LIN A93374
010002E90005D219	6	LAUNCHER GRENADE ARMAMENT SUBSYSTEM: M257 LIN L44031
010002E90005CD93	6	DISTRIBUTION BOX: J-1077/U LIN G26890
010002E90005E2D0	6	TOOL KIT ELECTRONIC EQUIPMENT: TK-105/G LIN W37388
010002E90005D514	6	MAST: AB-1339A/G LIN M13833
010002E90005CE47	6	GEN SET DED TM: 5KW 60HZ MTD ON M116A2 PU-797 LIN G42238
010002E90005D999	5	RADIO SET: AN/VRC-87F(C) LIN R67296
010002E90005D324	5	MEDICAL EQUIPMENT SET CHEMICAL AGENTS PATIENT DECONTAM INATION: LIN M25865
010002E90005C947	5	COMPUTER SYSTEM: DIGITAL AN/UYQ-90(V)3 LIN C78851
010002E900124CAE	5	INSTRUMENT SET RECONNAISSANCE AND SURVEYING: A N/TKQ-5 LIN D17191
010002E90005DF6B	5	TELEPHONE WIRE WITH REEL: MX-10891/G LIN T31872
010002E90005C6E8	5	COMPUTER SYSTEM: DIGITAL AN/UYQ-90(V)2 LIN C18278
010002E90005CDCF	4	DRUM FABRIC COLLAPSIBLE: POTABLE WATER LIN G68998
010002E90005E4DC	4	TRANSIT POCKET: CLINOMETER 0 TO 90 DEG ELEVA D EPRES W/ CARRY CASE LIN X11320
010002E90005ED33	4	BRIDGE FIXED: RAPIDLY LIN B24592

010002E90005E0FC	4	TRANSPORTER COMMON BRIDGE: LIN T91308
010002E90005E4F9	4	TRIPOD SURVEYING: W/HEAD EXT LEGS WOOD 64 IN LIN X31755
010002E90005C94C	4	COLLECTIVE PROTECTION EQUIPMENT: NBC SIMPLIFIE D M20 LIN C79000
010002E90005E4A5	4	COMPUTER SET FIELD ARTILLERY GENERAL: AN/GYK-5 6LIN Z00129
010002E9007BF26F	4	COMMAND SYSTEM TACTICAL: AN/TYQ-155 (V)1 LIN C61290
010002E90005DCEA	4	KNIGHT: M707 LIN S50205
010002E90005D59A	4	PERSONNEL IDENTIFICATION BAND KIT: W/COMP (PRI SONER OF WAR USE) LIN N83206
010002E90005CA95	4	CABLE ASSEMBLY FIBEROPTIC: CX-13295()/G LIN C54995
010002E90005D9EC	4	RADIO TERMINAL: LINE OF SIGHT MULTI-C AN/TRC-1 90C(V)1 LIN R90451
010002E90005E614	4	UNMANNED AERIAL VEHICLE (UAV): (TUAV-SHADOW) LIN Z43442
010002E90005E2CA	4	TOOL KIT ELECTRICAL REPAIRER: ARMY AIRCRAFT LIN W36703
010002E90005D319	4	MULTIMETER DIGITAL DISPLAY: AN/USM-486 LIN M23954
010002E90005D654	3	OSCILLOSCOPE: OS-303 G (TEMOD) LIN P32409
010002E90005E104	3	TRUCK UTILITY: ARMT CARRIER ARMD 1-1/4 TON 4X4 W/E (HM MWV) LIN T92242
010002E90005E2C5	3	TOOL KIT CARPENTERS: ENGINEER PLATOON W/CHEST LIN W34511
010002E90005C887	3	BOAT RECONNAISSANCE: PNEUMATIC 3-MAN LIN B84404
010002E90005CA07	3	DISPENSER MINE: M139 (HTLD) LIN D30897
010002E90005E107	3	TRUCK UTILITY: EXPANDED CAPACITY UP ARMORED HM MWV 4X4 W/E LIN T92446
010002E90005CDAD	3	GENERATOR SET DIESEL: 28V DC MEP-501A LIN G36169
010002E90005DE4B	3	TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 TON 4 X4 W/E W /W (HMMWV) LIN T61562
010002E90005D9A5	3	RADIO SET: AN/VRC-106(V)1 (C) LIN R68566
010002E90005DDAC	3	TRUCK AMBULANCE: 4 LITTER ARMD 4X4 W/E (HMMWV) LIN T38844
010002E90005DF57	3	TOOL KIT: GENERAL MECHANIC'S LIN T28688
010002E90005C6DE	3	COMPUTER SET: AN/GYG-1(V)3 LIN C18004
010002E90005E247	3	TOOL KIT SERVICE REFRIGERATION UNIT: GENERAL M AINTENAN CE LIN W51362
010002E900124F3A	3	DETECTING SYSTEM COUNTRMEASURES: AN/MLQ-40(V)4 LIN D04182
010002E90005D21F	3	LAUNCHER GRENADE SMOKE: SCREENING RP M250 LIN L44680
010002E90005D5B6	3	NUCLEAR BIO CHEM RECON VEH: (NBC RV) LIN N96543
010002E90005EA2E	2	AIR CONDITIONER 9000 BTUH HORIZONTAL: LIN Z02269
010002E90005ECDD	2	CENTRAL: COMMUNICATIONS AN/TSQ226(V)2 LIN C43331
010002E90005C580	2	ANALYZER SPECTRUM: AN/USM-677 (TEMOD) LIN A70285
010002E90005C55C	2	ANALYZER DATA COMMUNICATIONS: TS-4281/G LIN A55606
010002E90005DD46	2	SURVEYING INSTRUMENT: AZIMUTH LIN S69925
010002E90005DD43	2	SURVEY SET SUPPLEMENTARY EQUIP: POSITION & AZI MUTH DET ERMING SYS LIN S68559
010002E90005C63B	2	AIR CONDITIONER: FL/WALL A/C AC 208V 3PH 400CY 9000BTU CMP HZ LIN A23970
010002E90005CCD4	2	DECONTAMINATING APPARATUS: PWR DRVN LT WT LIN D82404

010002E90005DB32	2	REEL CABLE: DR-8 LIN R55920
010002E90005C977	2	CAMERA SET STILL PICTURE: KS-99 LIN C85494
010002E90005DAFF	2	RADIO SET: AN/USQ-140(V)2(C) LIN R42399
010002E900124F53	2	COMPUTER SYSTEM DIGIT: AN/PYQ-16 LIN C18891
010002E90005D2B6	2	INTERROGATOR SET: AN/TYX-1 LIN J99233
010002E90005EC40	2	COMPUTER SYSTEM: DIGITAL AN/GYK-61 LIN C18448
010002E90005D9CC	2	RADIO SET GRID REFERANCE UNIT: AN/VSQ-2 (N)4 LIN R78005
010002E90005E71E	2	REKEYING CONTROLER: KOK-13/TSEC LIN Z62433
010002E90005D9F2	2	RADIO TERMINAL SET: AN/GRC-229 LIN R91580
010002E90005D723	2	NET CONTROL STATION: AN/TSQ-158 LIN N04580
010002E90005DA49	2	SWITCHING GROUP: DIGITAL DATA OA-9511/TYQ LIN S24749
010002E90005E94C	2	TRANSEC MODULE: KSV-3 LIN Z92849
010002E90005DDD7	2	TELECONFERENCE SYS: AN/TYQ-122 LIN T43146
010002E90005E0C5	2	TERMINAL: SATELLITE COMMUNICATION AN/TSC-154 LIN T81733
010002E90005D14F	2	KY-99: MINTERM LIN K47623
010002E90005E878	2	JOINT NODE NETWORK (JNN) CENTRAL OFC TELEPHONE AUTOMAT IC: AN/TTC LIN Z00562
010002E90005E1BF	2	POWER SUPPLY VEHICLE: HYP-57/TSEC LIN V98788
010002E90005E10B	2	TEST SET: ELECTRICAL CABLE AN/STM-12 LIN T92821
010002E90005E5F1	2	MAINTENANCE KIT ELECTRONIC EQUIPMENT: MK-2770/ GLIN Z41479
010002E90005D9EE	2	RADIO TERMINAL: LINE OF SIGHT MULTI-C AN/TRC-1 90C(V)3 LIN R90587
010002E90005E23B	2	TOOL KIT BATTERY SERVICE: TK-90/G LIN W33278
010002E90005C59A	2	ANTENNA: AB-1404/TRC LIN A81826
010002E90005DE16	2	TEST SET TRANSPONDER: AN/APM-378 LIN T49324
010002E90005E831	2	TACTICAL AUTOMATIC LANDING SYSTEM (TALS): (TUA V-SHADOW) LIN Z77266
010002E900442ECE	2	UNMANED AERIAL VEHICLE LAUNCHER: (TUAV-SHADOW) LIN U31900
010002E900442EC4	2	GROUND CONTRL STATION (GCS): (TUAV-SHADOW) LIN G39497
010002E90005E8F1	2	GROUND DATA TERMINAL (GDT): (TUAV-SHADOW) LIN Z90583
010002E90005D95D	2	PROTRACTOR FAN RANGE DEFLECTION: AL 1 TO 50000 METER R ANGE LIN P81748
010002E90005CE02	1	GENERATOR SET: DIESEL ENG TRLR -MTD 15KW 60HZ LIN G78374
010002E90005C6E1	1	COMPUTER SYSTEM: DIGITAL AN/TYQ-103 LIN C18176
010002E90005D49F	1	LOUDSPEAKER PERMANENT MAGNET: LS-454/U LIN L84098
010002E90005DD9D	1	TARGET ACQUISITION SUBSYSTEM: COMMON GROUND ST ATION AN /TSQ-179(V LIN T37036
010002E90005CE01	1	GENERATOR SET: DIESEL TRL/MTD 60KW 50/60HZ PU8 05 CHASS IS W/FENDE LIN G78306
010002E90005DAB0	1	SHELTER: NONEXPD LTWR MP RIGID -WALL S788 102L X84WX67H MTD HMMWV LIN S01563
010002E90005ECDE	1	CENTRAL: COMMUNICATIONS AN/TSQ-226(V)3 LIN C43399
010002E90005DE9F	1	TENT: EXTENDABLE MODULAR 48LX20WUTILITY FOREST GREEN T YPE III LIN T71687

010002E90005E2FF	1	TOOL KIT PIONEER ENGINEER COMBAT PLATOON: TOOL S FOR MA NUAL LABOR LIN W48074
010002E90005DA21	1	SHELTER: NONEXPANDABLE S250 LIN S01427
010002E900124CFC	1	COMPUTER SYS DIGITAL: AN/TYQ-139 LIN C27838
010002E90005CD75	1	GENERATOR SET: DIESEL TRL/MTD 60KW 400HZ PU806 CHASSIS W/FENDER LIN G17460
010002E90005CD7B	1	GEN SET: DED SKID MTD 60KW 400HZ LIN G18052
010002E90005C69B	1	RADAR SET: AN/TPQ-37(V)9 LIN A41666
010002E90005CDF0	1	GEN SET: DED SKID MTD 10KW 400HZ LIN G74779
010002E90005E4FA	1	TRIPOD SURVEYING: W/HEAD W/O HEAD SUPPORT TUBE & ADAPT ER FIX LEG LIN X31892
010002E90005CACB	1	CABLE ASSEMBLY SPECIAL PURPOSE ELECTRICAL: 20 FEET LON G LIN C62417
010002E90005CE5E	1	GENERATOR SET DED TM: 10KW 400HZMTD ON M116A2 PU-799 LIN G53403
010002E90005D7FE	1	RADAR SET: AN/TPQ-36(V)10 LIN R14284
010002E90005D345	1	MEDICAL EQUIPMENT SET SICK CALL FIELD: LIN M30156
010002E90005DB1A	1	RADIO SET: AN/VRC-106(V)2 (C) LIN R45710
010002E90005D360	1	METEOROLOGICAL MEASURING SET: PROFILER AN/TMQ- 52LIN M36361
010002E90005C934	1	COMPUTER: TACTICAL AN/GYQ-88 LIN C77755
010002E90005C57F	1	ANTENNA: AT-197/GR LIN A69246
010002E90005ECF6	1	WORKSTATION: AIRSPACE OPERATION AN/FSQ-211 LIN W63636
010002E90005EDBD	1	CENTER: COMMUNICATIONS OPERATIONS LIN C18033
010002E90005EC3F	1	COMPUTER SYS: DIGITAL LIN C18391
010002E90005C748	1	COMPUTER SYSTEM: DIGITAL AN/TYQ-109(V)2 LIN C27775
010002E90005C642	1	AIR CONDITIONER: FL/WALL A/C AC 208V 3PH 60CY 18000 BT U CMP HZ LIN A24463
010002E90005C9A1	1	DIG TOPOGRAPH SYS: AN/TYQ-67(V) LIN D10281
010002E90005C9AB	1	DIGITAL TOPOGRAPHIC SUPPORT SYSTEM: AN/TYQ-71 LIN D11498
010002E900124F3C	1	TERMINAL SATELLITE COMMUNICATION: AN/TSC-183 LIN J97857
010002E90005EDDE	1	POWER PLANT: UTILITY LIN P63394
010002E90005CD05	1	CHARGER RADIAC DETECTOR: PP-1578/PD LIN E00533
010002E90005D49D	1	LOUDSPEAKER PERMANENT MAGNET: LS-166/U LIN L83413
010002E90005DC37	1	TACTICAL UNMANNED AERIAL VEHICLESYST: (SHADOW) LIN T09343
010002E900442EC7	1	MOBILE SECTION MULTI-FUNCTIONAL: SHADOW LIN M86971
010002E900442EC0	1	AIR VEHICLE TRANSPORTR: (TUAV-SHADOW) LIN A27808
010002E90005E927	1	PORTABLE GROUND DATA TERMINAL (PGDT): (TUAV-SH ADOW) LIN Z00714
010002E90005ED17	1	PORTABLE GROUND CONTROL STATION: SHADOW LIN Z01072
010002E90005DE31	1	TRUCK CARGO: 4X4 LMTV W/E LIN T60081
010002E900124F3B	1	DATA ANALYSI CENTRAL: AN/MSW-24 LIN D77801

INTENTIONALLY LEFT BLANK.

List of Symbols, Abbreviations, and Acronyms

AGT   Automated GFM Tool

API   application program interface

C3I   command, control, communications and intelligence

CBRN   chemical, biological, radiological, & nuclear

CSV   comma separated value

ECM   electronic counter measure

EwID   enterprise wide identifier

FFIR   Friendly Force Information Requirements

GFMDI   Global Force Management Data Initiative

GUI   graphical user interface

METT-TC   mission, enemy, terrain and weather, troops – time available, and civilian considerations

MOS   military operational series

NBC   nuclear, biological, chemical

UIC   Unique Identifier Code

1 (PDF)	DEFENSE TECHNICAL INFORMATION CTR DTIC OCA
2 (PDF)	DIRECTOR US ARMY RESEARCH LAB RDRL CIO L IMAL HRA MAIL & RECORDS MGMT
1 (PDF)	GOVT PRINTG OFC A MALHOTRA
4 (PDF)	DIR USARL RDRL CII T T HANRATTY M MITTRICK A VERTLIEB F BRUNDICK